JVC

SERVICE MANUAL

COLOR TELEVISION

BASIC CHASSIS
GF

AV-32150(B US)

HOW TO IDENTIFY MODEL

For model **AV-32150 (B US)**, the Suffix “B” is added to the serial No. on the rating label.

RATING LABEL

JVC MODEL NO. AV-32150
AC 120V 60Hz
W
INCHES
CAUTION
WARNING:
SHOCK HAZARD-DO NOT OPEN.
AVIS: RISQUE DE CHOC
ELECTRIQUE-NE PAS OUVRIR.
CERTIFICATION
AT THE DATE OF MANUFACTURE.
THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES. OPERATION IS SUBJECT
TO THE FOLLOWING TWO CONDITIONS: (1) THIS DEVICE MAY NOT CAUSE
HARMFUL INTERFERENCE, AND (2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE
RECEIVED, INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRED OPERATION.
CABLE COMPATIBLE TELEVISION APPARATUS, CANADA.
TÉLÉVISEUR CÂBLE COMPATIBLE, CANADA.
ASSEMBLED IN MEXICO BY JVC INDUSTRIAL DE MEXICO.
VICTOR COMPANY OF JAPAN, LIMITED. 12, 3-CHOME, MORIYA-CHO,
CHASSIS NO.
MANUFACTURED
SERIAL NO.
LISTED

INDICATED “B”

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No.51689B
Oct. 2000

PARTS DIFFERENCE TABLE

EXPLODED VIEW PARTS LIST (Page 54)

⚠	REF.No.	PARTS No.		PARTS NAME	DESCRIPTION
		AV-32150(US)	AV-32150(B US)		
⚠	V01	A80LJF30X08(G)	A80QCF240X14L	I.T.C. TUBE(C)	(INC. DY ,PC ,WED)
⚠	L01	CELD066-002JA	QQW0086-001	DEGAUSSING COIL	

PRINTED WIRING BOARD PARTS LIST (Page56～59)

⚠	SYMBOL No.	PARTS No.		PARTS NAME	DESCRIPTION
		AV-32150(US)	AV-32150(B US)		
		SGF-1004A-M2	**SGF-1019A-M2**	MAIN P.W.B	
	R1431	----------	**QRE121J-150Y**	CR	15Ω 1/2W Addition
	R1524	QRG029J-182	**QRG029J-102**	OM R	1kΩ 2W
	R1525	QRG029J-152	**QRG029J-102**	OM R	1kΩ 2W
	R1587	NRSA02J-332X	**NRSA02J-562X**	MG R	5.5kΩ 1/10W
	R1732	NRSA02J-224X	**NRSA02J-474X**	MG R	470kΩ 1/10W
⚠	C1531	QFZ0196-402	**QFZ0196-502**	MPP CAP	5000pF 1.5kVH ±3%
⚠	C1533	QFP32GJ-223	**QFP32GJ-183**	PP CAP	0.018μF 400V
	C1572	QFLC1HJ-153Z	**QFLC1HJ-393Z**	M CAP.	0.039μF 50V
⚠	L1531	QQR1027-003	**CE42116-00A**	LINE FILTER	
⚠	L1591	QQLZ026-430	**QQLZ026-410**	HEATER CHOKE	
⚠	Q1531	2SD2539-LB	**2SD2559-LB**	SI.TRANSISTOR	H.OUT

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Southwest	:	10700 Hammerly, Suite 105, Houston,Texas 77043	(713)935-9331
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JVC®

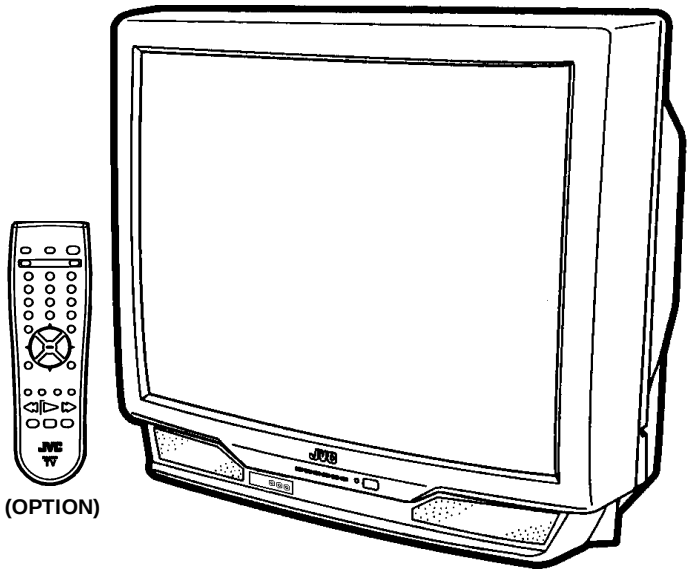
JVC

SERVICE MANUAL

COLOR TELEVISION

BASIC CHASSIS
GF

AV-27GFH/Z



(OPTION)

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No.51806
Jun. 2001

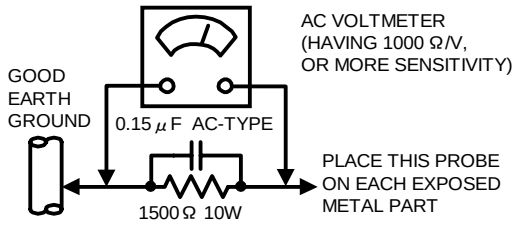
SPECIFICATIONS

Items	Contents
Dimensions (W × H × D)	25-3/4" × 23-3/8" × 20-1/2" (65.4cm × 59.1cm × 51.8cm)
Mass	79.9lbs / (36.3kg)
TV System and Color system	
TV RF System	CCIR(M)
Color System	NTSC
Sound System	BTSC (Multi Channel Sound)
TV Receiving Channels and Frequency	
VL Band	(02～06) 54MHz～88MHz
VH Band	(07～13) 174MHz～216MHz
UHF Band	(14～69) 470MHz～806MHz
CATV Receiving Channels and Frequency	
Low Band	(02～06, A-8) by (02～06&01)
High Band	(07～13) by (07～13)
Mid Band	(A～1) by (14～22)
Super Band	(J～W) by (23～36) (54MHz～804MHz)
Hyper Band	(W+1～W+28) by (37～64)
Ultra Band	(W+29～W+84) by (65～125)
Sub Mid Band	(A8, A4～A1) by (01, 96～99)
TV/CATV Total Channel	181 Channels
Intermediate Frequency	
Video IF Carrier	45.75 MHz
Sound IF Carrier	41.25 MHz (4.5MHz)
Color Sub Carrier	3.58 MHz
Power Input	120V AC, 60Hz
Power Consumption	120W / 1.7A
Picture Tube	27" (68cm) measured diagonally, Full Square
High Voltage	29kV±1.3kV (at zero beam current)
Speaker	2" × 4-3/4" / 5 × 12cm oval × 2
Audio Power Output	3W+3W
Input (Front & Rear)	Video : 1Vp-p 75Ω (RCA pin jack) Audio : 500mVrms (-4dBs), High Impedance (RCA pin jack) S-Video Y : 1Vp-p positive (negative sync provided, when terminated with 75Ω) C : 0.286Vp-p (burst signal, when terminated with 75Ω)
Modular Jack	Digital Interface for Command box.
Antenna terminal	75Ω (VHF/UHF) Terminal, F-Type Connector
Remote Control Unit (OPTIONAL)	RM-C205-1A (AA/R6/UM-3 battery × 2)

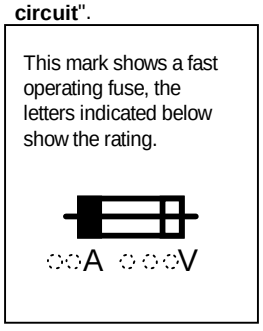
Design & specifications are subject to change without notice.

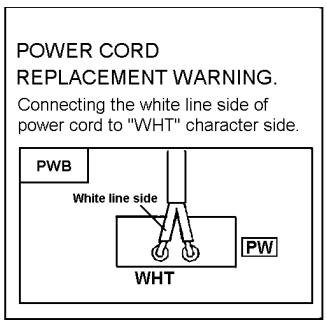
SAFETY PRECAUTIONS

1. The design of this product contains special hardware, many circuits and components specially for safety purposes. For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Service should be performed by qualified personnel only.
2. Alterations of the design or circuitry of the products should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacturer of responsibility for personal injury or property damage resulting therefrom.
3. Many electrical and mechanical parts in the products have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the parts list of Service manual. **Electrical components having such features are identified by shading on the schematics and by (⚠) on the parts list in Service manual.** The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement part shown in the parts list of Service manual may cause shock, fire, or other hazards.
4. **Use isolation transformer when hot chassis.**
   The chassis and any sub-chassis contained in some products are connected to one side of the AC power line. An isolation transformer of adequate capacity should be inserted between the product and the AC power supply point while performing any service on some products when the HOT chassis is exposed.
5. **Don't short between the LIVE side ground and ISOLATED (NEUTRAL) side ground or EARTH side ground when repairing.**
   Some model's power circuit is partly different in the GND. The difference of the GND is shown by the LIVE : (⊥) side GND, the ISOLATED(NEUTRAL) : (⏚) side GND and EARTH : (⏚) side GND. Don't short between the LIVE side GND and ISOLATED(NEUTRAL) side GND or EARTH side GND and never measure with a measuring apparatus (oscilloscope etc.) the LIVE side GND and ISOLATED(NEUTRAL) side GND or EARTH side GND at the same time.
   If above note will not be kept, a fuse or any parts will be broken.
6. If any repair has been made to the chassis, it is recommended that the B1 setting should be checked or adjusted (See ADJUSTMENT OF B1 POWER SUPPLY).
7. The high voltage applied to the picture tube must conform with that specified in Service manual. Excessive high voltage can cause an increase in X-Ray emission, arcing and possible component damage, therefore operation under excessive high voltage conditions should be kept to a minimum, or should be prevented. If severe arcing occurs, remove the AC power immediately and determine the cause by visual inspection (incorrect installation, cracked or melted high voltage harness, poor soldering, etc.). To maintain the proper minimum level of soft X-Ray emission, components in the high voltage circuitry including the picture tube must be the exact replacements or alternatives approved by the manufacturer of the complete product.
8. Do not check high voltage by drawing an arc. Use a high voltage meter or a high voltage probe with a VTVM. Discharge the picture tube before attempting meter connection, by connecting a clip lead to the ground frame and connecting the other end of the lead through a 10kΩ 2W resistor to the anode button.
9. When service is required, observe the original lead dress. Extra precaution should be given to assure correct lead dress in the high voltage circuit area. Where a short circuit has occurred, those components that indicate evidence of overheating should be replaced. Always use the manufacturer's replacement components.
10. **Isolation Check**
    (Safety for Electrical Shock Hazard)
    After re-assembling the product, always perform an isolation check on the exposed metal parts of the cabinet (antenna terminals, video/audio input and output terminals, Control knobs, metal cabinet, screw heads, earphone jack, control shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.
    (1) **Dielectric Strength Test**
    The isolation between the AC primary circuit and all metal parts exposed to the user, particularly any exposed metal part having a return path to the chassis should withstand a voltage of 1100V AC (r.m.s.) for a period of one second.
    (. . . Withstand a voltage of 1100V AC (r.m.s.) to an appliance rated up to 120V, and 3000V AC (r.m.s.) to an appliance rated 200V or more, for a period of one second.)
    This method of test requires a test equipment not generally found in the service trade.
    (2) **Leakage Current Check**
    Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Using a "Leakage Current Tester", measure the leakage current from each exposed metal part of the cabinet, particularly any exposed metal part having a return path to the chassis, to a known good earth ground (water pipe, etc.). Any leakage current must not exceed 0.5mA AC (r.m.s.).
    However, in tropical area, this must not exceed 0.2mA AC (r.m.s.).
    ● **Alternate Check Method**
    Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Use an AC voltmeter having 1000 ohms per volt or more sensitivity in the following manner. Connect a 1500Ω 10W resistor paralleled by a 0.15μF AC-type capacitor between an exposed metal part and a known good earth ground (water pipe, etc.). Measure the AC voltage across the resistor with the AC voltmeter. Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and measure the AC voltage across the resistor. Now, reverse the plug in the AC outlet and repeat each measurement. Any voltage measured must not exceed 0.75V AC (r.m.s.). This corresponds to 0.5mA AC (r.m.s.).
    However, in tropical area, this must not exceed 0.3V AC (r.m.s.). This corresponds to 0.2mA AC (r.m.s.).



11. **High voltage hold down circuit check.**
    After repair of the high voltage hold down circuit, this circuit shall be checked to operate correctly.
    See item "**How to check the high voltage hold down circuit**".



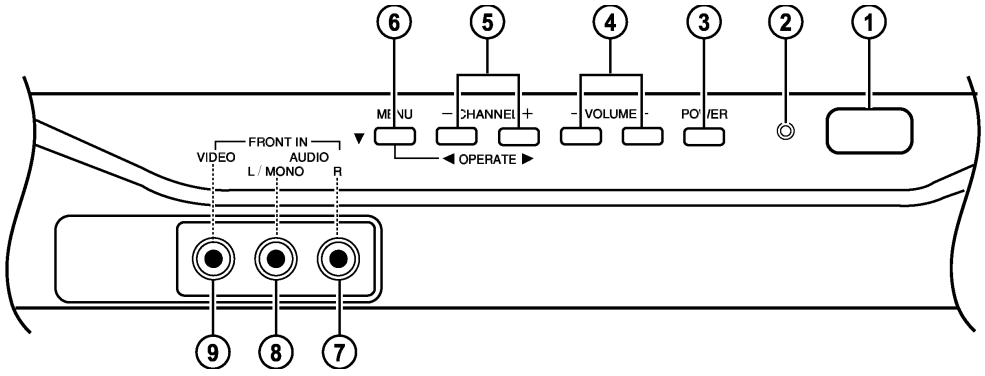


FEATURES

- New chassis design enables use of a main board with simplified circuitry.
- Digital comb filter Improved picture quality.
- Full-square CRT (cathode ray tube) reproduces fine textured picture in every detail.
- With Digital Interface (modular jack) for OCC box.
- Closed-caption broadcasts can be viewed.
- With AUDIO / S-VIDEO / VIDEO INPUT terminal.
- S-VIDEO input terminal for taking best advantage of Super VHS.
- Built-in V-CHIP system.

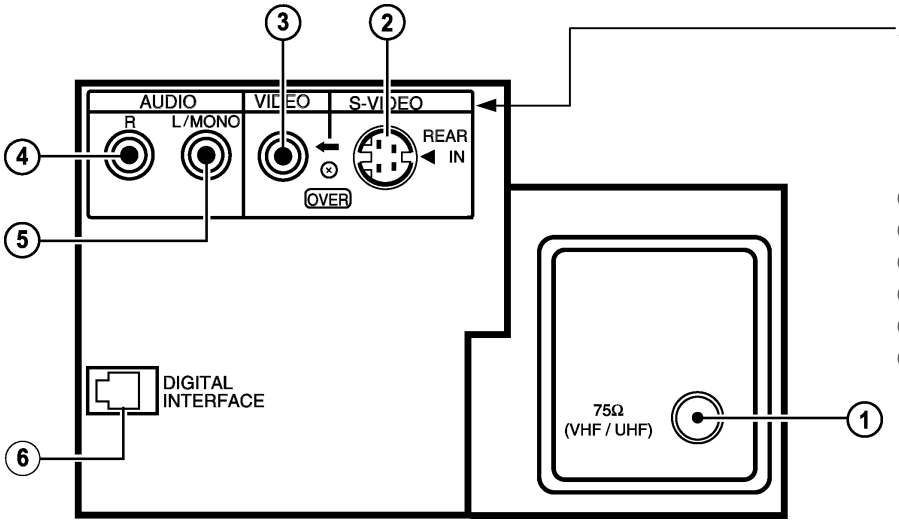
FUNCTIONS

■ FRONT PANEL



① REMOTE CONTROL SENSOR
② ON-TIMER INDICATOR
③ POWER SWICH BUTTON
④ VOLUME(-/+) BUTTON
⑤ CH (-/+) & OPERATE(◀/▶) BUTTON
⑥ MENU / WORLD CLOCK BUTTON
⑦ AUDIO-INPUT(R) Terminal
⑧ AUDIO-INPUT(L/MONO) Terminal
⑨ VIDEO INPUT Terminal

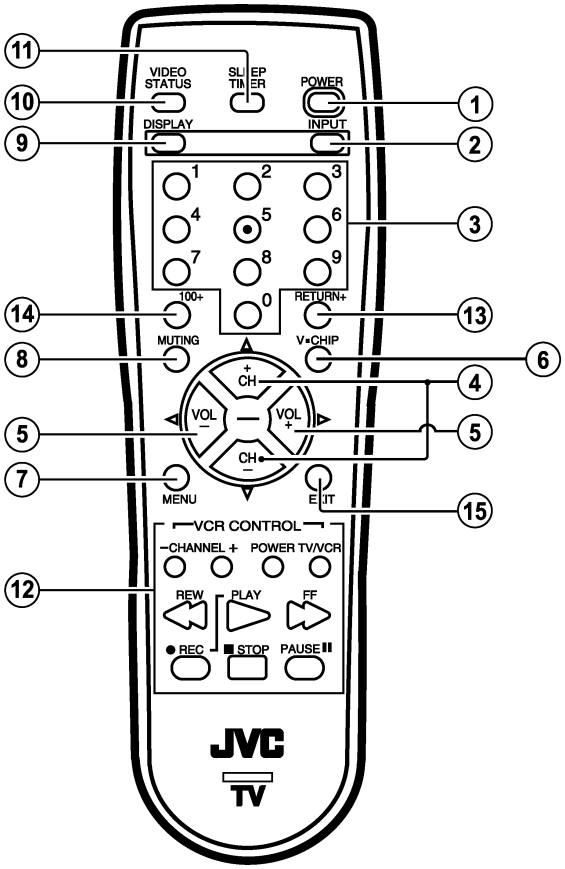
■ REAR PANEL



A/V Input Terminal
- Used to connect audio/video devices like VCRs, DVD, players, stereo amplifiers, game consoles, …etc.

① U/V ANT. Terminal
② S-VIDEO INPUT Terminal
③ VIDEO INPUT Terminal
④ AUDIO(R) INPUT Terminal
⑤ AUDIO(L/MONO) INPUT Terminal
⑥ DIGITAL INTERFACE Terminal
Modular connector : used to connect on command box.

■ REMOTE CONTROL UNIT (OPTIONAL : RM-C205)



① POWER Key
- TV ON or OFF.

② INPUT SELECT Key
- Selects the Input source for TV.

③ DIRECT CH Key
- CH. select.

④ UP/DOWN CH Key.
- CH. select.

⑤ VOL(-/+) Key
- Vol. level control & setup menu setting.

⑥ V-CHIP Key
- V-CHIP setting : ON / OFF or BLOCK setting of each RATING.

⑦ MENU Key
- Press MENU to activate the on screen menu system.

⑧ MUTING Key
- Instantly turns the Vol. down completely.

⑨ DISPLAY Key
- Shows the CH. & AV input.

⑩ VIDEO STATUS Key
- Use this key to enter the SETUP MENU only.

⑪ SLEEP TIMER Key
- Turn the TV-off for you after you fall sleep.

⑫ VCR Control

⑬ RETURN^{+} Key

⑭ 100^{+} Key
- Use the 100+ Key to directly access channels.

⑮ EXIT Key
- To leave a menu screen.

SPECIFIC SERVICE INSTRUCTIONS

DISASSEMBLY PROCEDURE

REMOVING THE REAR COVER

- Unplug the power supply cord.

1. Remove the 9 screws marked Ⓐ as shown in Fig.2.
2. Remove the rear cover toward you.

∗ When reinstalling the rear cover, carefully push it inward after inserting the chassis into the rear cover groove.

REMOVING THE CHASSIS

- After removing the rear cover.

1. Slightly raise the both sides of the chassis by hand and remove the 2 claws under the both sides of the chassis from the front cabinet.
2. Draw the chassis backward along the rail in the arrow direction marked Ⓑ as shown in the Fig.2.
   (If necessary, take off the wire clamp, connector's etc.)

∗ When conducting a check with power supplied, be sure to confirm that the CRT earth wire is connected to the CRT SOCKET PWB and the MAIN PWB.

REMOVING THE TERMINAL BOARD

- After removing the rear cover.

1. Remove the 1 screws marked Ⓒ as shown in Fig.2.
2. After removing the claw marked Ⓔ in the direction of arrow mark as shown in Fig.1.
3. When you pull out the TERMINAL BOARD in the direction of arrow marked Ⓕ as shown in Fig.1, it can be removed.

REMOVING THE FRONT CONTROL PW BOARD

- After removing the rear cover and chassis.

1. Remove the 2 screws marked Ⓓ as shown in Fig.2.
2. Then remove the FRONT CONTROL PWB.

REMOVING THE SPEAKER

- After removing the rear cover and chassis.

1. Remove the 2 screws marked Ⓖ as shown in Fig.2.
2. Follow the same steps when removing the other hand speaker.

CHECKING THE MAIN PW BOARD

1. To check the backside of the MAIN PW Board.
   (1) Pull out the chassis. (Refer to REMOVING THE CHASSIS).
   (2) Erect the chassis vertically so that you can easily check the backside of the MAIN PW Board.

[CAUTION]

- When erecting the chassis, be careful so that there will be no contacting with other PWB.
- Before turning on power, make sure that the CRT earth wire and other connectors are properly connected.

WIRE CLAMPING AND CABLE TYING

1. Be sure to clamp the wire.
2. Never remove the cable tie used for tying the wires together. Should it be inadvertently removed, be sure to tie the wires with a new cable tie.

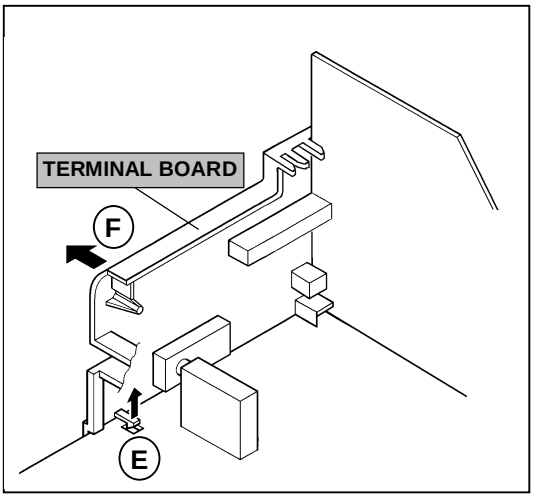


Fig. 1

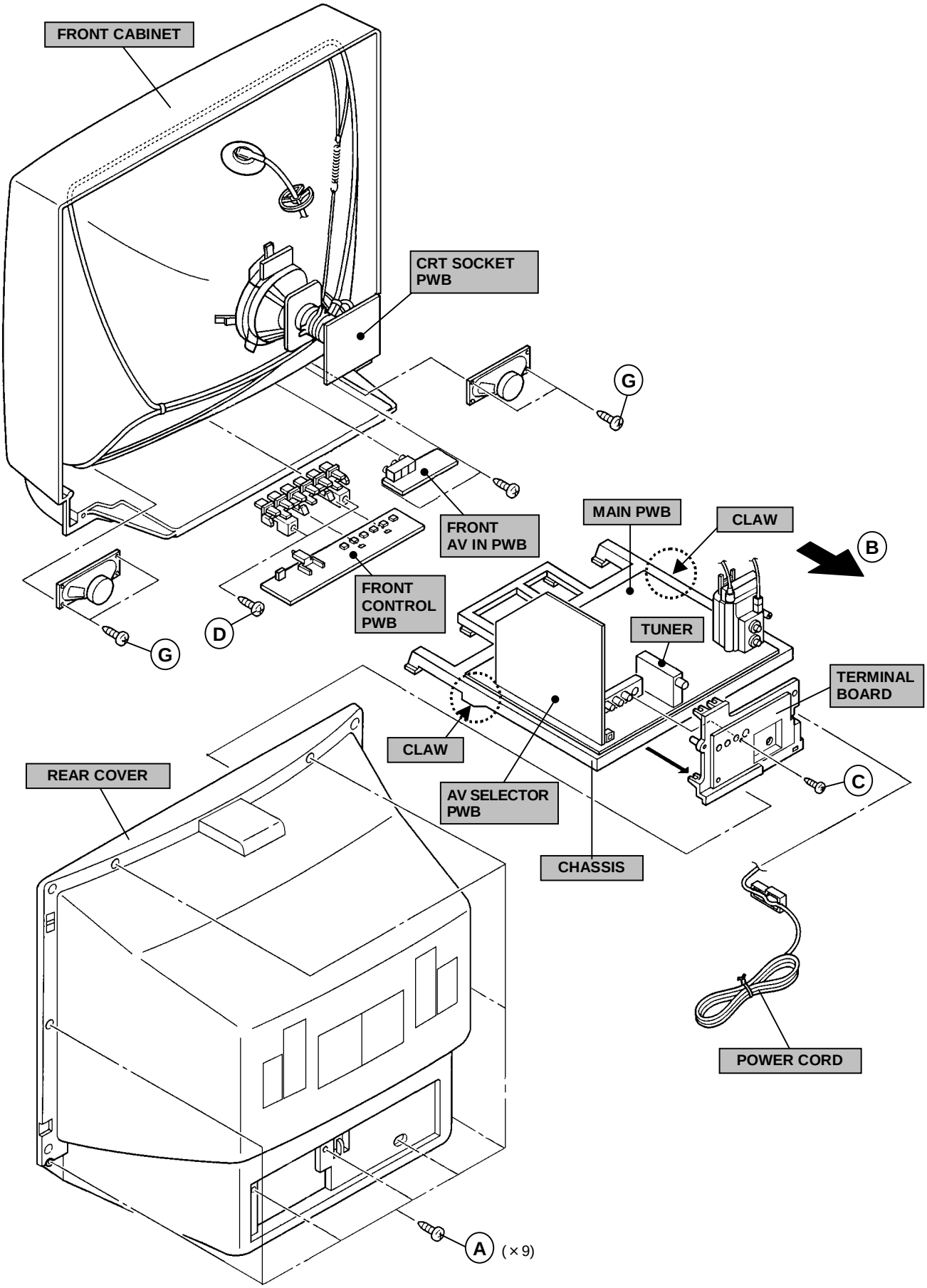

FRONT CABINET
CRT SOCKET PWB
G
FRONT AV IN PWB
MAIN PWB
CLAW
B
FRONT CONTROL PWB
D
G
TUNER
TERMINAL BOARD
CLAW
C
REAR COVER
AV SELECTOR PWB
CHASSIS
POWER CORD
A (× 9)

Fig.2

REMOVING THE CRT

∗Replacement of the CRT should be performed by 2 or more persons.

- After removing the rear cover, chassis etc.,

1. Putting the CRT change table on soft cloth, the CRT change table should also be covered with such soft cloth (shown in Fig.3).
2. While keeping the surface of CRT down, mount the TV set on the CRT change table balanced will as shown in Fig.4.
3. Remove 4 screws marked by arrows with a box type screwdriver as shown in Fig.4.

- Since the cabinet will drop when screws have been removed, be sure to support the cabinet with hands.

4. After 4 screws have been removed, put the cabinet slowly on cloth (At this time, be carefully so as not to damage the front surface of the cabinet) shown in Fig.5.

- The CRT should be assembled according to the opposite sequence of its dismounting steps.

∗ The CRT change table should preferably be smaller that the CRT surface, and its height be about 35cm.

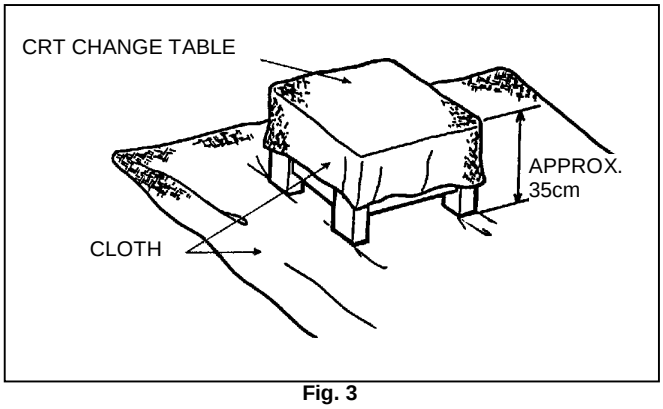


Fig. 3

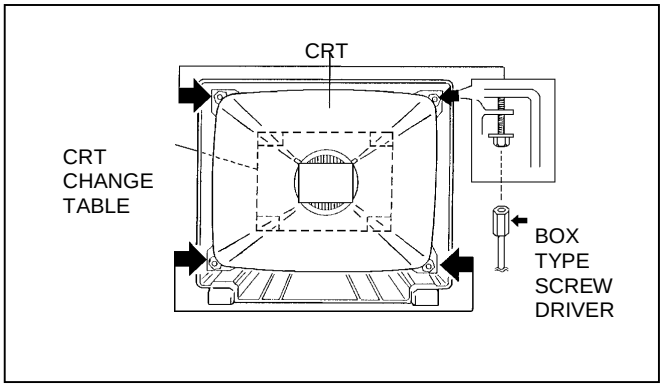


Fig. 4

COATING OF SILICON GREASE FOR ELECTRICAL INSULATION ON THE CRT ANODE CAP SECTION.

- Subsequent to replacement of the CRT and HV transformer or repair of the anode cap, etc. by dismounting them, be sure to coat silicon grease for electrical insulation as shown in Fig.6.
  Wipe around the anode button with clean and dry cloth. (Fig.6)
  Coat silicon grease on the section around the anode button. At this time, take care so that any silicon greases dose not sticks to the anode button. (Fig.7)

★ **Silicon grease product No. KS - 650N**

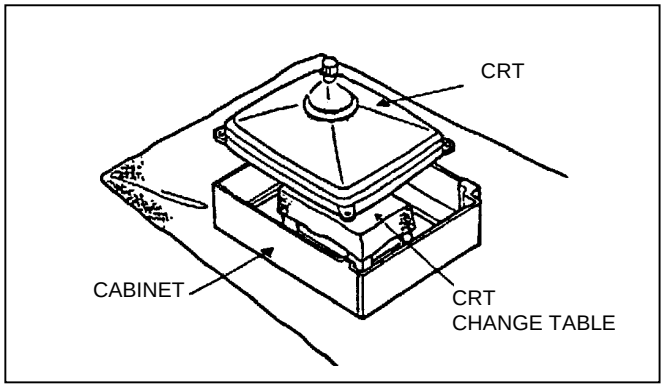


Fig. 5

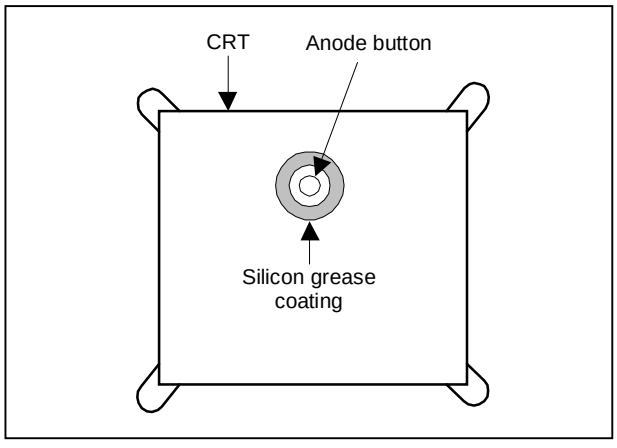


Fig. 6

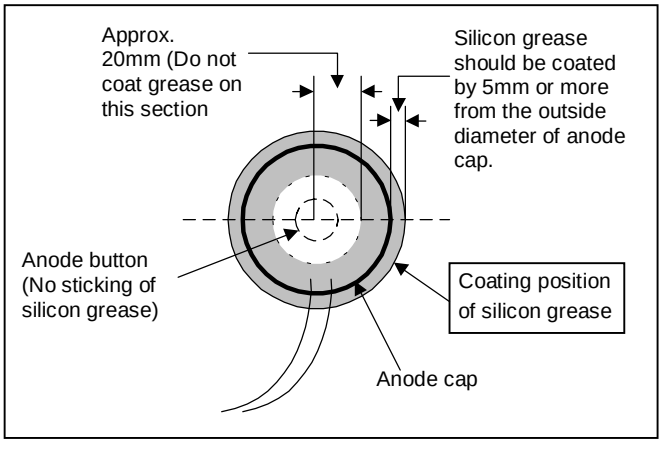


Fig. 7

REPLACEMENT OF CHIP COMPONENT

■ CAUTIONS

1. Avoid heating for more than 3 seconds.
2. Do not rub the electrodes and the resist parts of the pattern.
3. When removing a chip part, melt the solder adequately.
4. Do not reuse a chip part after removing it.

■ SOLDERING IRON

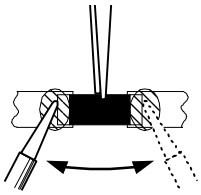
1. Use a high insulation soldering iron with a thin pointed end of it.
2. A 30w soldering iron is recommended for easily removing parts.

■ REPLACEMENT STEPS

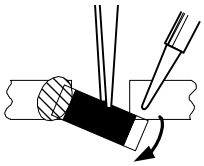
1. How to remove Chip parts

◆ **Resistors, capacitors, etc**

(1) As shown in the figure, push the part with tweezers and alternately melt the solder at each end.

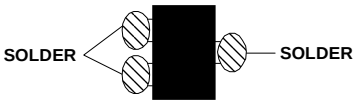


(2) Shift with tweezers and remove the chip part.

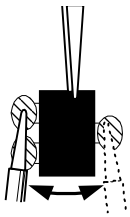


◆ **Transistors, diodes, variable resistors, etc**

(1) Apply extra solder to each lead.



(2) As shown in the figure, push the part with tweezers and alternately melt the solder at each lead. Shift and remove the chip part.

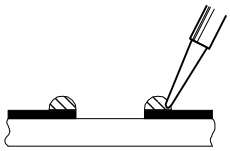


Note : After removing the part, remove remaining solder from the pattern.

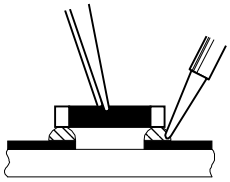
2. How to install Chip parts

◆ **Resistors, capacitors, etc**

(1) Apply solder to the pattern as indicated in the figure.



(2) Grasp the chip part with tweezers and place it on the solder. Then heat and melt the solder at both ends of the chip part.

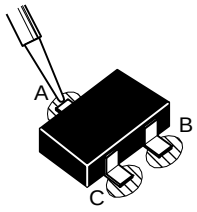


◆ **Transistors, diodes, variable resistors, etc**

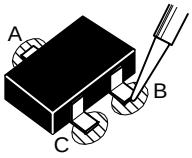
(1) Apply solder to the pattern as indicated in the figure.

(2) Grasp the chip part with tweezers and place it on the solder.

(3) First solder lead **A** as indicated in the figure.



(4) Then solder leads **B** and **C**.



MEMORY IC REPLACEMENT

1. Memory IC

This model uses a memory IC.
This memory IC stores data for proper operation of the video and deflection circuits.
When replacing, be sure to use an IC containing this (initial value) data.

2. Memory IC replacement procedure

(1) Power off
Switch off the power and disconnect the power cord from the wall outlet.

(2) Replace the memory IC
Initial value must be entered into the new IC.

(3) Power on
Connect the power cord to the wall outlet and switch on the power.

(4) System constant check and setting

*** It must not adjust without signal.**

1) Press **SLEEP TIMER** key and, while the indication of "**SLEEP TIMER 0 MIN.**" is being displayed, press **DISPLAY** key and **VIDEO STATUS** key on the remote control unit simultaneously.
2) The SERVICE MENU screen of Fig.1 is displayed.
3) While the SERVICE MENU is displayed, again simultaneously press the DISPLAY and VIDEO STATUS keys to display the Fig.2 SYSTEM CONSTANT screen.
4) Refer to the SYSTEM CONSTANT table and check the setting items. Where these differ, select the setting item with the MENU UP/DOWN key and adjust the setting with the MENU LEFT/RIGHT keys. (The letters of the selected item are displayed in yellow.)
5) After adjusting, release the MENU LEFT/RIGHT key to store the setting value.
6) Press the EXIT key twice to return the normal screen.

(5) Receive channel setting
Refer to the OPERATING INSTRUCTIONS (USER'S GUIDE) and set the receive channels (Channels Preset) as described.

(6) User settings
Check the user setting items according to Table 2.
Where these do not agree, refer to the OPERATING INSTRUCTIONS (USER'S GUIDE) and set the items as described.

(7) SERVICE MENU setting
Verify what to set in the SERVICE MENU, and set whatever is necessary. (Fig.1) Refer to the SERVICE ADJUSTMENT for setting.

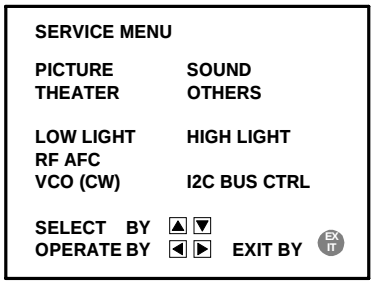


Fig.1

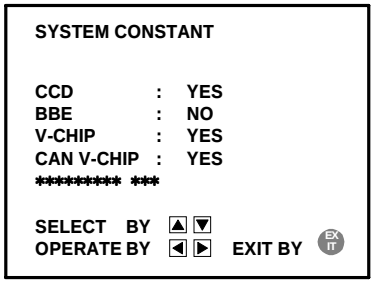


Fig.2

REMOTO CONTROL KEY LOCATION

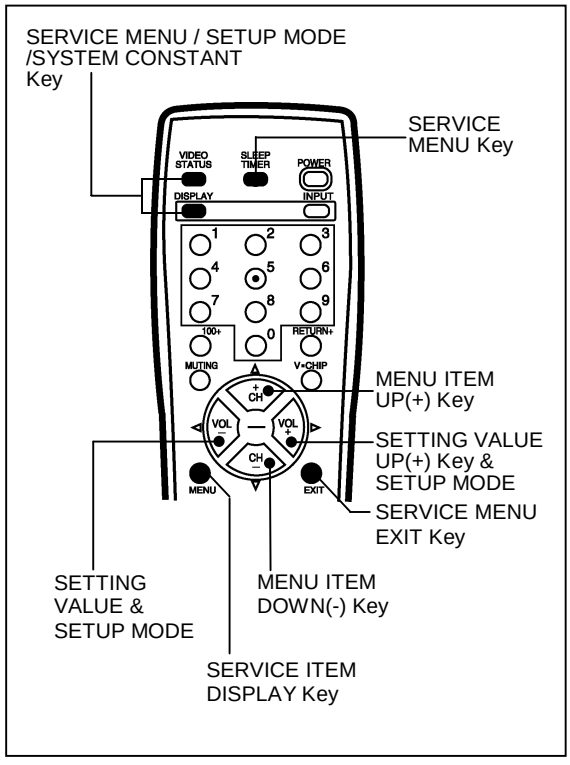


TABLE 1 (System Constant setting)

Setting item	Setting constant	Setting value
CCD	YES → NO	YES
BBE	YES → NO	NO
V-CHIP	YES → NO	YES
CAN V-CHIP	YES → NO	YES

TABLE 2 (User setting)

Setting item	Setting value	Setting item	Setting value	
POWER	OFF	V-CHIP	OFF	ALL CLEAR
DISPLAY	OFF		SET US or CANADIAN TV RATINGS	
CLOSED CAPTION	OFF (CC1 / T1)		SET MOVIE RATINGS	
SET LOCK CODE	Unnecessary to set (0000)		UNRATED	VIEW

SETUP MODE

PRESETTING BEFORE ADJUSTMENT

Unless otherwise specified in the adjustment instructions, preset the following functions with the remote control unit.

- **How to enter the SETUP MODE.**
  1. Press the VOL+key (or VOL-key) and check VOL. on the screen as shown in Fig.1.
  2. Then before disappear press the DISPLAY key and VIDEO STATUS key at the same time.
  3. Following display will be shown in Fig.2.

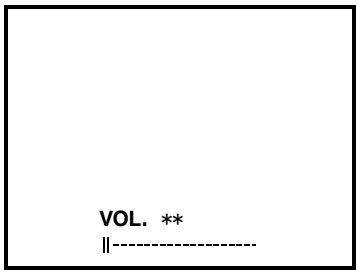


Fig.1

- **How to select SETUP ITEM.**
  1. Press the ▲/▼ key with the remote control unit.
  2. Then the L(◀) / R(▶) key is pressed, the SETUP ITEM screen setting or verifications can be performed.
  3. Press the EXIT [EXIT] key , returns to the previous screen.

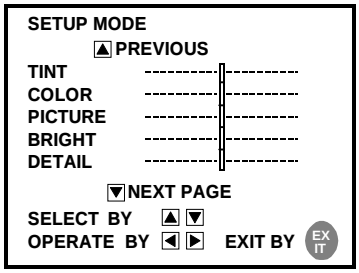


Fig.2

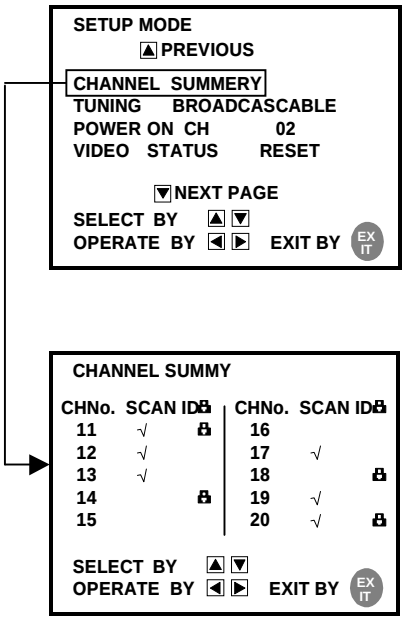


Fig.3

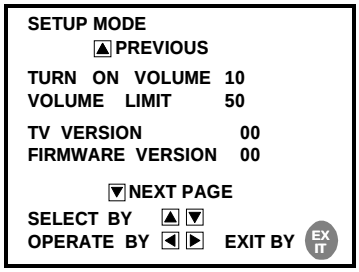


Fig.4

INITIAL SETUP ITEM & SETTING DATA

No	SET UP ITEM	SETTING DATA	REMARKS
1	TINT	Center	With the VIDEO STATUS RESET in the setup mode, the CENTER POSITION is reset.
	COLOR	↑	
	PICTURE	↑	
	BRIGHT	↑	
	DETAIL	↑	
2	CHANNEL SUMMARY	All Channel Memorized (A setup is necessary independent Cable TV & AIR.)	Refer to channel setting of SETUP MODE.
3	TUNING	Broadcast	Select Air or Cable TV.
4	POWER ON CH	02CH	Receivable CH at the time when the power is turned ON.
5	TURN ON VOLUME	10	Volume at the time when the power is turned ON.
6	VOLUME LIMIT	50	Max. Volume.

NOTE

* ***When adjustments have been completed, always return all data to the channel setting of setup mode described below.***
* ***If the setup in 2 & 3 above have not been done properly during adjustments for servicing, no broadcast can be received on the TV.***

CHANNEL SETTING OF SETUP MODE

Band	CH Display	Setting
VHF_L	02	✓
	03	—
	04	✓
	05	✓
	06	✓
VHF_H	07	✓
	08	—
	09	✓
	10	—
	11	✓
	12	—
	13	✓

Band	CH Display	Setting
UHF	14	✓
	36	✓
	41	—
	46	—
	63	✓
	69	✓

Band	CH Display		Setting
MID	A	14	✓
	B	15	✓
	C	16	✓
	D	17	✓
	E	18	✓
	F	19	—
	G	20	—
	H	21	✓
	I	22	✓
SUPER	J	23	—
	K	24	✓
	L	25	—
	M	26	—
	N	27	—
	O	28	✓
	P	29	—
	Q	30	—
	R	31	✓
	S	32	✓
	T	33	—
	U	34	—
	V	35	—
	W	36	✓

Band	CH Display		Setting
SUB MID	A-7	93	✓
	A-6	94	—
	A-5	95	—
	A-4	96	—
	A-3	97	✓
	A-2	98	—
	A-1	99	—
	A-8	01	—
HYPER	W+11	47	✓
	W+12	48	—
	W+17	53	—
	—	—	—
	W+23	59	✓
	—	—	—
ULTRA	W+29	65	—
	—	—	—
	W+51	—	—
	—	—	—
	W+78	—	—
	—	—	—
	W+84	—	—

SERVICE ADJUSTMENT

ADJUSTMENT PREPARATION:

1. **You can make the necessary adjustments for this unit with either the remote control unit or with the adjustment equipment and parts as given below.**
2. **Adjustment with the remote control unit is made on the basis of the initial setting values, however, the new setting values which set the screen to its optimum condition may differ from the initial settings.**
3. Make sure that AC power is turned on correctly.
4. Turn on the power for the set and test equipment before use, and start the adjustment procedures after waiting at least 30 minutes.
5. Unless otherwise specified, prepare the most suitable reception or input signal for adjustment.
6. Never touch any adjustment parts, which are not specified in the list for this adjustment-variable resistors, transformers, condensers, etc.

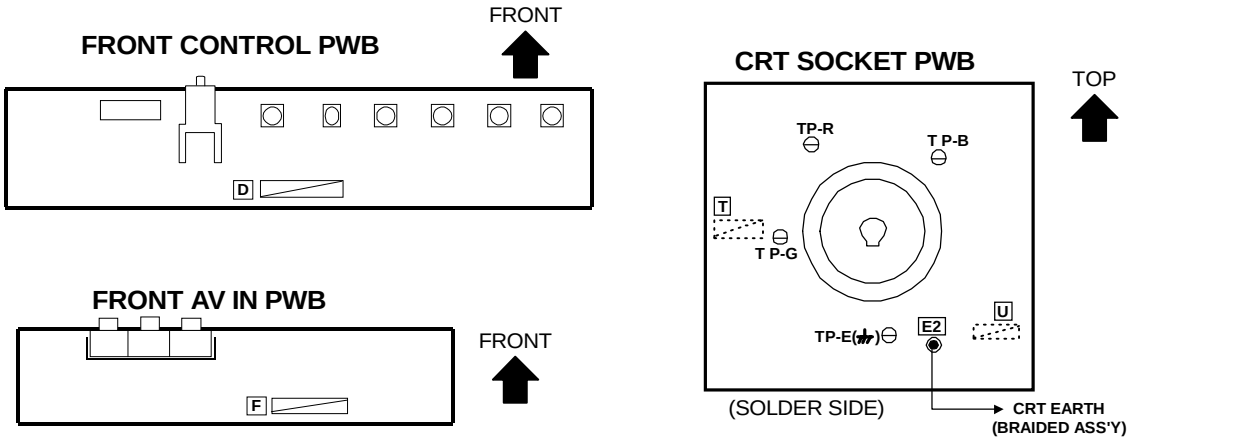
MEASURING INSTRUMENT

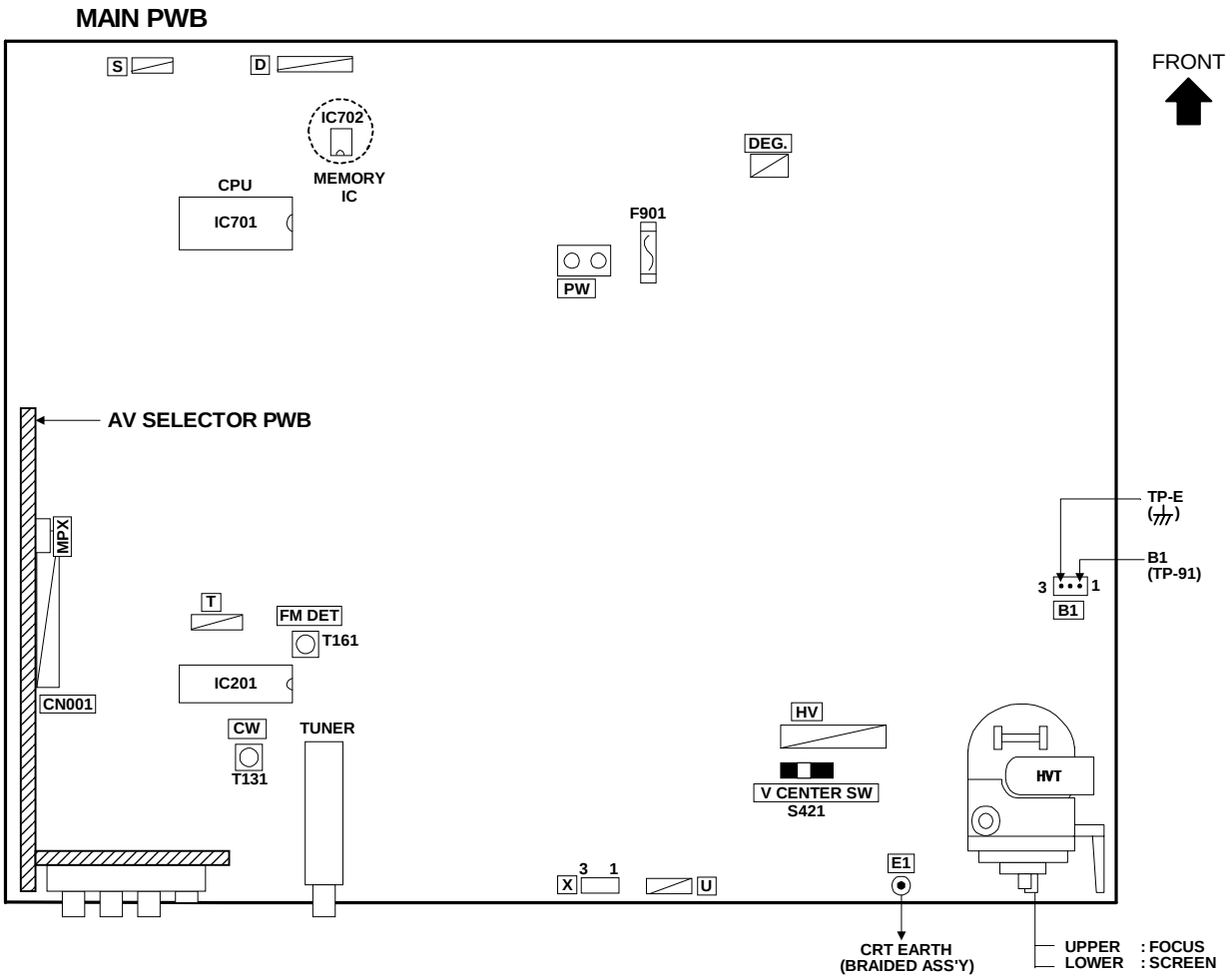
1. DC voltmeter (or digital voltmeter)
2. Oscilloscope
3. Signal generator (Pattern generator) [NTSC]
4. Remote control unit (OPTION)
5. TV audio multiplex signal generator
6. Frequency counter

ADJUSTMENT ITEMS

- ●Check of B1 POWER SUPPLY
- ●IF VCO adjustment
- ●RF AGC adjustment
- ●FOCUS adjustment
- ●DEFLECTION adjustment
  - V. CENTER, V. SIZE, V. POSITION adjustment
  - H. POSITION adjustment
- ●VIDEO / CHROMA adjustment
  - WHITE BALANCE (Low light) adjustment
  - WHITE BALANCE (High light) adjustment
  - SUB BRIGHT adjustment
  - SUB CONTRAST adjustment
  - SUB COLOR adjustment
  - SUB TINT adjustment
- ●MTS circuit adjustment
  - INPUT LEVEL check
  - STEREO VCO adjustment
  - SAP VCO adjustment
  - FILTER check
  - SEPARATION adjustment

ADJUSTMENT LOCATIONS





BASIC OPERATION OF SERVICE MENU

1. TOOL OF SERVICE MENU OPERATION

Operate the SERVICE MENU with the REMOTE CONTROL UNIT.

2. SERVICE MENU ITEMS

In general, basic setting (adjustments) items or verifications are performed in the SERVICE MENU.

- PICTURE ····· This set the setting values (adjustment values) of the VIDEO/CHROMA and DEFLECTION circuits.
- SOUND ····· This set the setting values (adjustment values) of the AUDIO circuit.
- THEATER ····· This is used when the THEATER MODE is adjusted. **[Do not work]**
- OTHERS ····· This is used when the OTHERS MODE is adjusted. **[Do not adjust]**
- LOW LIGHT ····· This sets the setting values (adjustment values) of the WHITE BALANCE circuit.
- HIGH LIGHT ····· This sets the setting values (adjustment values) of the WHITE BALANCE circuit.
- RF AFC ····· This is used when the RF AFC MODE is verified. **[Do not adjust]**
- VCO (CW) ····· This is used when the IF VCO is adjusted.
- I^2C BUS CTRL ····· This is used when ON/OFF of the I^2C BUS CTRL is set. **[Fixed ON : Do not adjust]**

3. Basic Operations of the SERVICE MENU

(1) How to enter the SERVICE MENU.

Press **SLEEP TIMER** key and, while the indication of "**SLEEP TIMER 0 MIN.**" is being displayed, press **DISPLAY** key and **VIDEO STATUS** key on the remote control unit simultaneously to enter the **SERVICE MENU** screen shown in the next figure page.

(2) SERVICE MENU screen selection

Press the UP / DOWN key of the MENU to select any of the following items.

● PICTURE	● SOUND
● THEATER	● OTHERS
● LOW LIGHT	● HIGH LIGHT
● RF AFC	
● VCO (CW)	● I2C BUS CTRL

(3) Enter the any setting (adjustment) mode

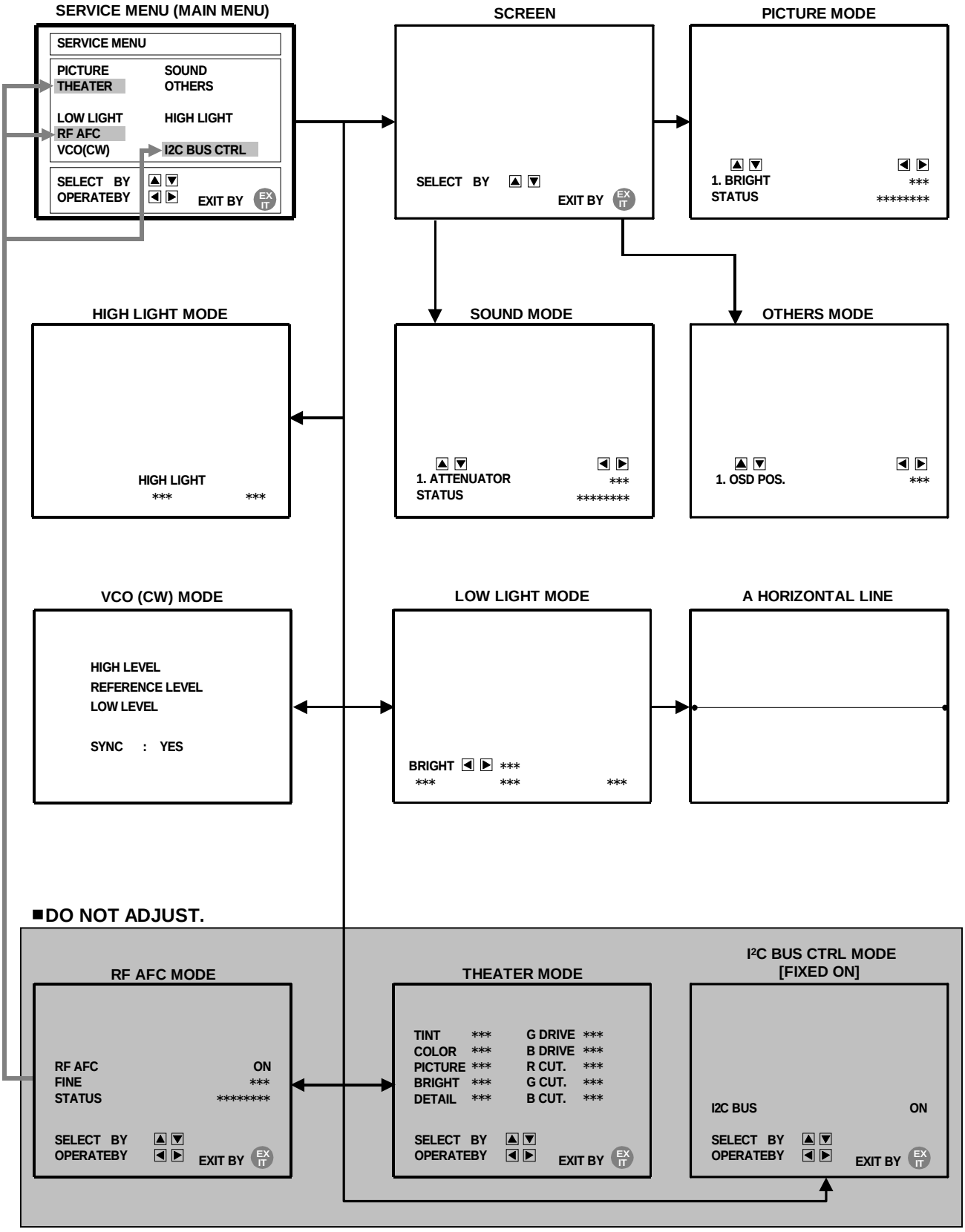
- **PICTURE, SOUND and OTHERS mode**
  1) If select any of PICTURE, SOUND or OTHERS items, and the LEFT / RIGHT key is pressed from SERVICE MENU (MAIN MENU), the screen will be displayed as shown in figure page later.
  2) Then the UP / DOWN key is pressed, the PICTURE mode screen or the SOUND mode screen or the OTHERS mode screen is displayed, and the PICTURE, SOUND or OTHERS setting can be performed.

- **LOW LIGHT, HIGH LIGHT, and VCO (CW) mode**
  1) If select any of LOW LIGHT / HIGH LIGHT / VCO (CW) items, and the LEFT / RIGHT key is pressed from SERVICE MENU (MAIN MENU), the screens will be displayed as shown in figure page later.
  2) Then the settings or verifications can be performed.

- **THEATER, RF AFC, AND I^2C BUS CTRL mode**

  This item is no requirement for adjustment.

SERVICE MENU FLOW CHART

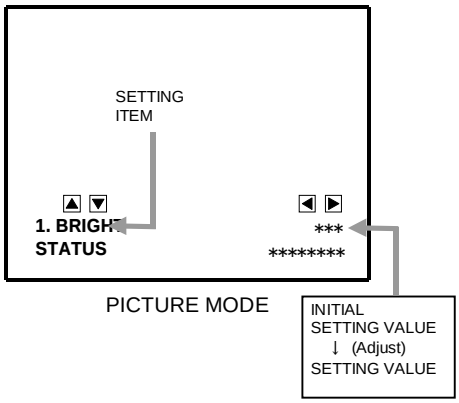


(4) Setting method

1) UP / DOWN key of the MENU
   Select the SETTING ITEM.

2) LEFT / RIGHT key of the MENU
   Setting (adjust) the SETTING VALUE of the SETTING ITEM.
   When the key is released the SETTING VALUE will be stored (memorized).

3) EXIT key
   Returns to the previous screen.



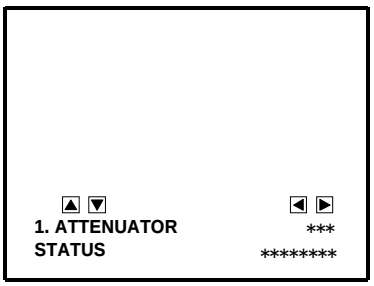
PICTURE MODE

(5) Releasing SERVICE MENU

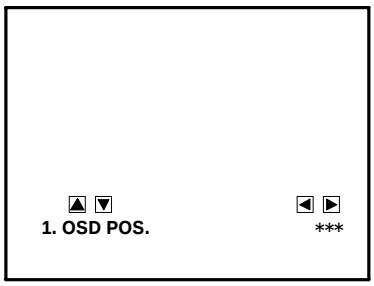
1) After returning to the SERVICE MENU upon completion of the setting (adjustment) work, press the EXIT key again.

★ The settings for LOW LIGHT and HIGH LIGHT are described in the WHITE BALANCE page of ADJUSTMENT.

★ The setting for VCO (CW) are described in the IF VCO page of ADJUSTMENT.



SOUND MODE



OTHERS MODE

INITIAL SETTING VALUE

1. Adjustment of the SERVICE MENU is made on the basis of the initial setting values; however, the new setting values which set the screen in its optimum condition may differ from the initial setting.
2. Do not change the initial Setting Values of the Setting (Adjustment) items not listed in "ADJUSTMENT".

- **PICTURE MODE**

✧ The four setting items in the video mode No.8 EXT BRI., No.9 EXT PIC., No.12 EXT TINT and No.13 EXT COLOR are linked to the items in the TV MODE No.1 BRIGHT, No.2 PICTURE, No.6 TINT and No.7 COLOR, respectively. When the setting items in the TV mode are adjusted, the values in the setting items in the video mode are revised automatically to the same values in the TV mode. (The initial setting values given in ( ) are off-set values.)

✧ When the four items (No.8, 9, 12 and 13) are adjusted in the video mode, the setting values in each item are revised independently.

No.	Setting (Adjustment) item	Variable range	Initial setting value
1.	BRIGHT	000～127	064
2.	PICTURE	000～127	088
3.	WPS (WHITE PEAK SUPPRESSOR)	000 / 001	001
4.	TV DETAIL	000～063	040
5.	TV BPF (TV B.P.FILTER)	000 / 001	001
6.	TINT	000～127	067
7.	COLOR	000～127	047
8.	EXT BRIGHT	±25	(+001)
9.	EXT PICT.	±25	(000)
10.	EXT DETAIL	000～063	038
11.	EXT BPF (EXT B.P.FILTER)	000 / 001	001
12.	EXT TINT	±25	(+002)
13.	EXT COLOR	±25	(+003)
14.	V SIZE	000～063	015
15.	V CENTER	000～007	000
16.	H POSITION	000～031	022
17.	H AFC	000 / 001	000
18.	BLANKING	000 / 001	000
19.	RF AGC	000～063	035
20.	PIF VCO	000～127	064

- **SOUND MODE**

No.	Setting (Adjustment) item	Variable range	Initial setting value
1.	ATTENUATOR	000～063	050
2.	BALANCE	000～063	032
3.	NOISE DET.	000 / 001	001
4.	IN LEVEL (INPUT LEVEL)	000～063	027
5.	FH MONITOR	000 / 001	000
6.	STEREO VCO	000～063	023
7.	PILOT CAN. (PILOT CANCELER)	000 / 001	000
8.	FILTER	000～063	030
9.	LOW SEP. (LOW SEPARATION)	000～063	028
10.	HI SEP. (HIGH SEPARATION)	000～063	019
11.	5FH MON. (5FH MONITOR)	000 / 001	000
12.	SAP VCO	000～063	027
13.	IN GAIN	000 / 001	000
14.	FIL. OFFSET	±010	000
15.	BBE BASS	±010	-001
16.	BBE TRE	±010	-001

● **OTHERS MODE**

Setting (Adjustment) item	Variable range	Initial setting value
OSD POS.	000～007	000
CCD POS. (CLOSED CAPTION DECODER POS.)	000～015	002
EOSEL	000 / 001	000
F1__FIELD	000 / 001	000
F1__LINE21	000～015	008
F2__LINE21	000～015	008
OSD STABI.	000 / 001	000
SYNC SEP.	000 / 001	001
MENU COLOR	000～-030	-010
MENU PICT	000～-030	-012
MENU BRI	000～-030	-012
TU1 FM TRP	000 / 001	000
TU2 FM TRP	000 / 001	000

● **LOW LIGHT MODE**

Setting (Adjustment) item	Variable range	Initial setting value
R CUTOFF	000～255	020
G CUTOFF	000～255	020
B CUTOFF	000～255	020

● **HIGH LIGHT MODE**

Setting (Adjustment) item	Variable range	Initial setting value
G DRIVE	000～255	128
B DRIVE	000～255	128

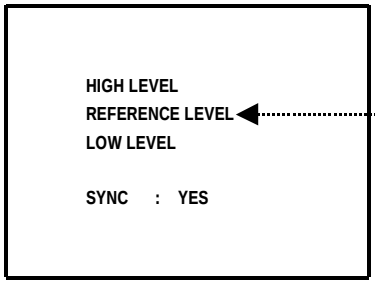
■ ADJUSTMENTS

B1 POWER SUPPLY

Item	Measuring instrument	Test point	Adjustment part	Description
Check of B1 POWER SUPPLY	**DC Voltmeter**	**B1 (【B1】 Connector 【1】 pin) (TP-91)** **TP-E(⏚) (【B1】 Connector 【3】 pin)**		1. Receive a black-and-white signal. (Color off) 2. Connect the DC Voltmeter to【B1】connector【1】pin (TP-91) and TP-E(⏚) (B1 connector【3】pin). 3. Confirm that the voltage is DC134.5V±2V.

ADJUSTMENT OF IF. VCO

Item	Measuring instrument	Test point	Adjustment part	Description
IF VCO adjustment	**Signal generator**		**CW TRANSF. (T131)** **[VCO(CW)] MODE**	● Under normal conditions, no adjustment is required. 1. Receive a NTSC broadcast. (Use channels without offset frequency). 2. Select the VCO (CW) mode from the SERVICE MENU. 3. Confirm that the color change from「HIGH LEVEL」to「LOW LEVEL」by CW trans. and check the「SYNC : YES」. 4. Adjust until「REFERENCE LEVEL」mark turns yellow. and then confirm that the「SYNC : YES」again.



ADJUSTMENT OF RF AGC

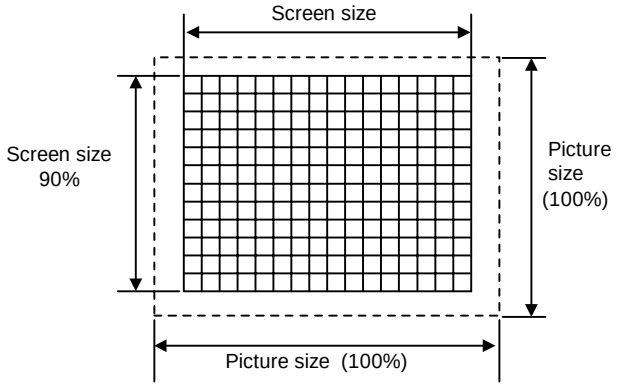
Item	Measuring instrument	Test point	Adjustment part	Description
RF. AGC adjustment			**No.19 RF AGC**	1. Receive a broadcast. 2. Select “No.19 RF AGC” of the PICTURE MODE. 3. Press the MUTING key and turn off color. 4. With the MENU LEFT key, get noise in the screen picture. (0 side of setting value) 5. Press the MENU RIGHT key and stop when noise disappears from the screen. 6. Change to other channels and make sure that there is no irregularity. 7. Press the MUTING key and get color out.

ADJUSTMENT OF FOCUS

Item	Measuring instrument	Test point	Adjustment part	Description
FOCUS adjustment	**Signal generator**		**FOCUS VR [In HVT]**	1. Receive a crosshatch signal. 2. While looking at the screen, adjust FOCUS VR so that the vertical and horizontal lines will be clear and in fine detail. 3. Make sure that the picture is in focus even when the screen gets darkened.

ADJUSTMENT OF DEFLECTION CIRCUIT

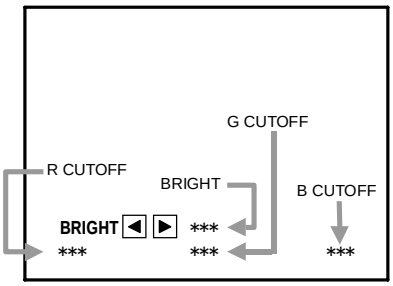
Item	Measuring instrument	Test point	Adjustment part	Description
V.CENTER, V.SIZE and V.POSITION adjustment	**Signal generator**		**No.14 V SIZE** **No.15 V CENTER** **V.CENTER SW (S1421)**	1. Receive a crosshatch signal. 2. Make sure that the "No.15 V CENTER" of the PICTURE SERVICE MODE is 0. 3. Use the LEFT/RIGHT keys of the MENU to set the initial setting value for the No.14 V SIZE. 4. Adjust the vertical SCREEN size to **90%** with the No.14 V SIZE and S1421 (V.CENTER SW).
H.POSITION Adjustment	**Signal generator**		**No.16 H POSITION**	1. Receive a crosshatch signal. 2. Select the "No.16 H POSITION" of the PICTURE MODE. 3. Set the initial setting value of the "No.16 H POSITION" with the LEFT/RIGHT key of the MENU. 4. Adjust the "No.16 H POSITION" until the screen will be horizontally centered.

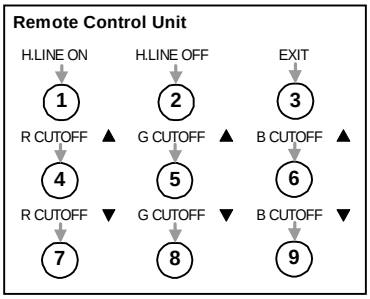


ADJUSTMENT OF VIDEO / CHROMA CIRCUIT

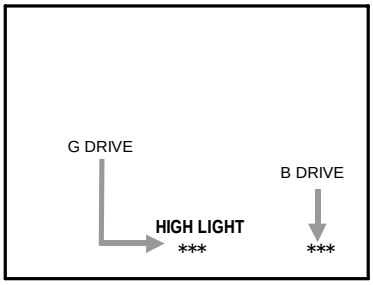
Item	Measuring instrument	Test point	Adjustment part	Description
WHITE BALANCE (Low Light) adjustment	**Signal generator**		**BRIGHT** **R CUTOFF** **G CUTOFF** **B CUTOFF** **SCREEN VR**	1. Receive a black-and-white signal. (Color off) 2. Select the [LOW LIGHT] MODE from the SERVICE MENU. 3. Set the initial setting value of “BRIGHT” is 64, with the LEFT/RIGHT key of the remote control unit. 4. Set the initial setting value of “R CUTOFF”, “G CUTOFF” and “B CUTOFF” is 20, with the ④ to ⑨ keys of the remote control unit. 5. Display a single horizontal line by pressing the ① key of the remote control unit. 6. Turn the screen VR all the way to the left. 7. Turn the screen VR gradually to the right from the left until either one of the red, blue or green colors appears faintly. 8. Adjust the two colors which did not appear until the single horizontal line that is displayed becomes white using the ④ to ⑨ keys of the remote control unit. 9. Turn the screen VR until the single horizontal line is displayed faintly. 10. Press the ② key to return to the regular screen. ∗ The ③ EXIT key is the cancel key for the WHITE BALANCE.
WHITE BALANCE (High Light) adjustment	**Signal generator**		**G DRIVE** **B DRIVE**	1. Receive a black-and-white signal. (Color off) 2. Select the [HIGH LIGHT] MODE in the SERVICE MENU. 3. Set the initial setting value of “G DRIVE” and “B DRIVE” with the ⑤, ⑥, ⑧and ⑨ keys of the remote control unit. 4. Adjust the screen until it becomes white using the ⑤, ⑥, ⑧ and ⑨ keys of the remote control unit. ∗ The ③ EXIT key is the cancel key for the WHITE BALANCE.

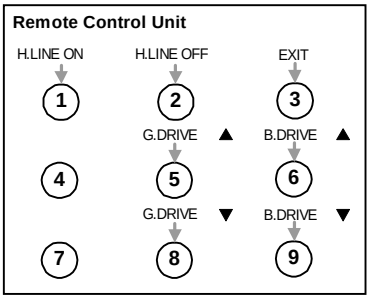
[LOW LIGHT] MODE





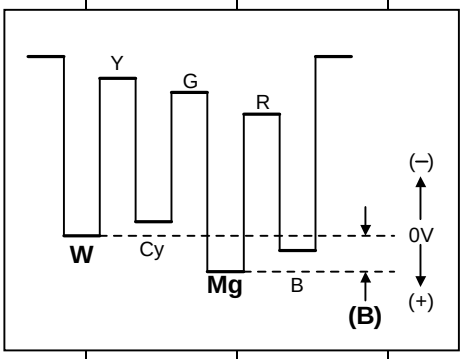
[HIGH LIGHT] MODE

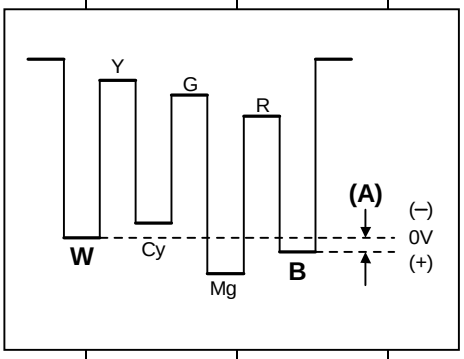




Item	Measuring instrument	Test point	Adjustment part	Description
SUB BRIGHT adjustment			**No.1 BRIGHT**	1. Receive a broadcast. 2. Select “No.1 BRIGHT” of the PICTURE MODE. 3. Set the initial setting value of the “No.1 BRIGHT” with the LEFT/RIGHT key of the MENU. 4. If the brightness is not the best with the initial setting value, make fine adjustment of the “No.1 BRIGHT” until you get the optimum brightness.
SUB CONTRAST adjustment			**No.2 PICTURE**	1. Receive a broadcast. 2. Select “No.2 PICTURE” of the PICTURE MODE. 3. Set the initial setting value of the “No.2 PICTURE” with the LEFT/RIGHT key of the MENU. 4. If the contrast is not the best with the initial setting value, make fine adjustment of the “No.2 PICTURE” until you get the optimum contrast.
SUB TINT Adjustment (I)			**No.6 TINT**	**[Method of adjustment without measuring instrument]** 1. Receive a broadcast. 2. Select “No.6 TINT” of the PICTURE MODE. 3. Set the initial setting value of the “No.6 TINT” with the LEFT/RIGHT key of the MENU 4. If the tint is not the best with the initial setting value, make fine adjustment of the “No.6 TINT” until you get the optimum tint
SUB COLOR adjustment (I)			**No.7 COLOR**	**[Method of adjustment without measuring instrument]** 1. Receive a broadcast. 2. Select “No.7 COLOR” of the PICTURE MODE. 3. Set the initial setting value of the “No.7 COLOR” with the LEFT/RIGHT key of the MENU. 4. If the color is not the best with the Initial setting value, make fine adjustment of the “No.7 COLOR” until you get the optimum color.

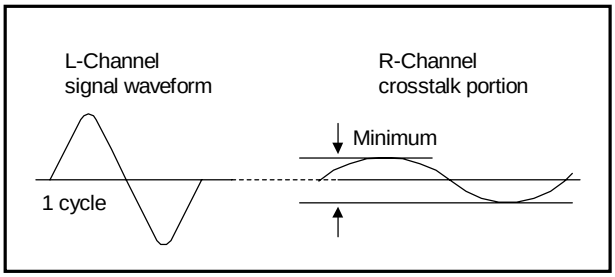
Item	Measuring instrument	Test point	Adjustment part	Description
SUB TINT Adjustment (Ⅱ)	**Signal Generator** **Oscilloscope**	**TP-B** **TP-E(⏚)** **[CRT SOCKET PWB]**	**No.6 TINT**	**[Method of adjustment using measuring instrument]** 1. Receive a fill field color bar signal (75% white). 2. Select No.6 TINT of the PICTURE MODE. 3. Set the initial setting value of the No.6 TINT with the LEFT/RIGHT key of the MENU. 4. Connect the oscilloscope between TP-B and TP-E. 5. Adjust TINT and bring the value of (B) in the illustration to the +0V(W-Mg).
SUB COLOR adjustment (Ⅱ)	**Signal Generator** **Oscilloscope**	**TP-B** **TP-E(⏚)** **[CRT SOCKET PWB]**	**No.7 COLOR**	**[Method of adjustment using measuring instrument]** 1. Receive a fill field color bar signal (75% white) . 2. Select No.7 COLOR of the PICTURE MODE. 3. Set the initial setting values of the No.7 COLOR with the LEFT/RIGHT key of the MENU. 4. Connect the oscilloscope between TP-B and TP-E. 5. Adjust TINT and bring the value of (A) in the illustration to +1V(W-B).





ADJUSTMENT OF MTS CIRCUIT

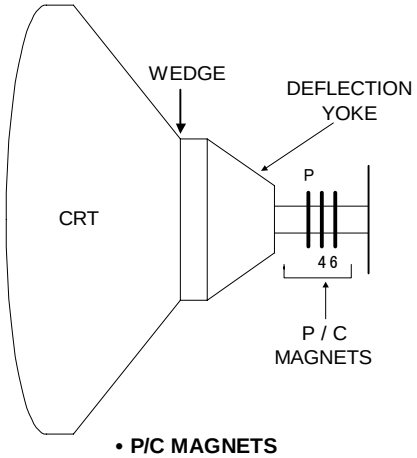
Item	Measuring instrument	Test point	Adjustment part	Description
MTS INPUT LEVEL check			**No.4 IN LEVEL**	1. Select the “No.4 IN LEVEL” of the SOUND MODE. 2. Verify that the “No.4 IN LEVEL” is set at its initial setting value.
MTS STEREO VCO adjustment	**Signal generator** **Frequency counter**	**R OUT [AUDIO OUT]**	**No.5 FH MONITOR** **No.6 STEREO VCO**	1. Receive a RF signal (non-modulated sound signal) from the antenna terminal. 2. Select the “No.5 FH MONITOR” of SOUND MODE, and change the setting value from 0 to 1. 3. Connect the Frequency Counter to R OUT RCA pin of the AUDIO OUT. 4. Select the “No.6 STEREO VCO”. 5. Set the initial setting value of the “No.6 STEREO VCO” with the LEFT/RIGHT key of the menu. 6. Adjust the “No.6 STEREO VCO” so that the Frequency Counter will display 15.73kHz±0.1kHz. 7. Select the “No.5 FH MONITOR” of the SOUND MODE, and reset the setting value from 1 to 0.
MTS SAP VCO adjustment	**Signal generator**	**【MPX】 Connector** **【4】pin SDA** **【3】pin GND** **[AV SELECTOR PWB]** **R OUT [AUDIO OUT]**	**No.11 5FH MON.** **No.12 SAP VCO**	1. Receive a RF signal (non-modulated sound signal) from the antenna terminal. 2. Connect between pin【4】of【MPX】connector and GND (Pin【3】of【MPX】connector) through 1MΩ Resistor. 3. Select the “No.11 5FH MON.” of the SOUND MODE, and reset the1 setting value from 0 to 1. 4. Connect the Frequency counter to R OUT RCA pin of the AUDIO OUT. 5. Select the “No.12 SAP VCO”. 6. Set the initial setting value of “No.12 SAP VCO” with the LEFT/RIGHT key of the menu. 7. Adjust the “No.12 SAP VCO” so that the Frequency Counter will display 78.67kHz±0.5kHz. 8. Select the “No.11 5FH MON.” of the SOUND MODE, and reset the setting value from 1 to 0.

Item	Measuring instrument	Test point	Adjustment part	Description
MTS FILTER check	**Signal generator** **Oscilloscope**		**No.7 PILOT CAN** **No.8 FILTER**	1. Receive a RF signal (MTS pilot sound signal) from the antenna terminal. 2. Select the No.7 PILOT CAN of the SOUND MODE, and reset the 1 selecting value from to 1. 3. Connect the oscilloscope to pin No.2 of MPX connector and GND. 4. Adjust to mini. wave level by No.8 FILTER. 5. Select the No.7 PILOT CAN of sound mode, and reset the setting value from 1 too.
MTS SEPARATION adjustment 	**TV audio multiplex signal generator** **Oscilloscope**	**L OUT** **R OUT** **[AUDIO OUT]**	**No.9 LOW SEP.** **No.10 HI SEP.**	1. Input a stereo L signal (300Hz) from the TV audio multiplex signal generator to the antenna terminal. 2. Connect an oscilloscope to L OUT RCA pin of the AUDIO OUT, and display one cycle portion of the 300Hz signal. 3. Change the connection of the oscilloscope to R OUT RCA pin of the AUDIO OUT, and enlarge the voltage axis. 4. Select the “No.9 LOW SEP.” of the SOUND MODE. 5. Set the initial setting value of the “No.9 LOW SEP.” with the LEFT/RIGHT key of the menu. 6. Adjust the “No.9 LOW SEP.” so that the stroke element of the 300Hz signal will become minimum. 7. Change the signal to 3kHz, and similarly adjust the “No.10 HI SEP.”.

PURITY, CONVERGENCE

PURITY ADJUSTMENT

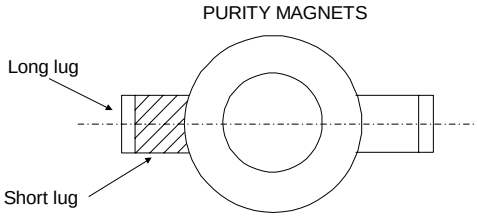
1. Demagnetize CRT with the demagnetizer.
2. Loosen the retainer screw of the deflection yoke.
3. Remove the wedges.
4. Input a green raster signal from the signal generator, and turn the screen to green raster.
5. Move the deflection yoke backward.
6. Bring the long lug of the purity magnets on the short lug and position them horizontally. (Fig.2)
7. Adjust the gap between two lugs so that the GREEN RASTER will come into the center of the screen. (Fig.3)
8. Move the deflection yoke forward, and fix the position of the deflection yoke so that the whole screen will become green.
9. Insert the wedge to the top side of the deflection yoke so that it will not move.
10. Input a crosshatch signal.
11. Verify that the screen is horizontal.
12. Input red and blue raster signals, and make sure that purity is properly adjusted.



• P/C MAGNETS

P : PURITY MAGNET
4 : 4 POLES (convergence magnets)
6 : 6 POLES (convergence magnets)

Fig.1



Bring the long lug over the short lug and position them horizontally.

Fig.2

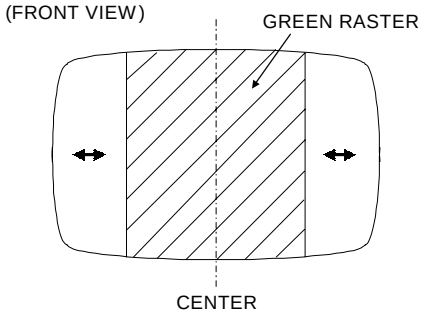


Fig.3

STATIC CONVERGENCE ADJUSTMENT

1. Input a crosshatch signal.
2. Using 4-pole convergence magnets, overlap the red and blue lines in the center of the screen (Fig.1) and turn them to magenta (red/blue).
3. Using 6-pole convergence magnets, overlap the magenta(red/blue) and green lines in the center of the screen and turn them to white.
4. Repeat 2 and 3 above, and make best convergence.

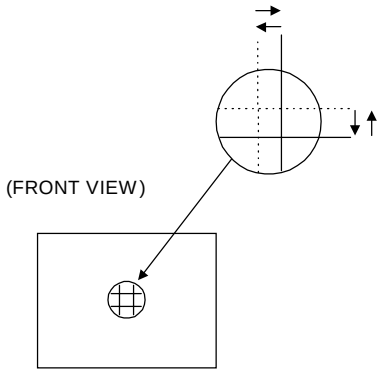


Fig.1

DYNAMIC CONVERGENCE ADJUSTMENT

1. Move the deflection yoke up and down and overlap the lines in the periphery. (Fig. 2)
2. Move the deflection yoke left to right and overlap the lines in the periphery. (Fig. 3)
3. Repeat 1 and 2 above, and make best convergence.

(FRONT VIEW)

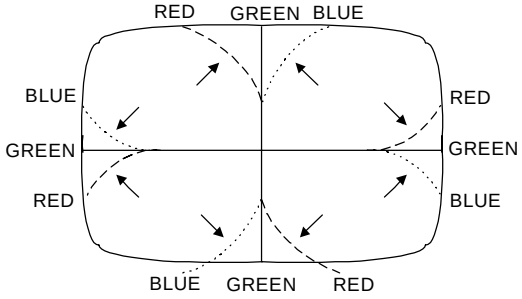


Fig.2

- After adjustment, fix the wedge at the original position.
  Fasten the retainer screw of the deflection yoke.
  Fix the 6 magnets with glue.

[Adjustment for the models equipped with differential coil.]

- If the lines are not aligned, as shown in Fig. 4, correct them with the differential coil attached to the deflection yoke.

(FRONT VIEW)

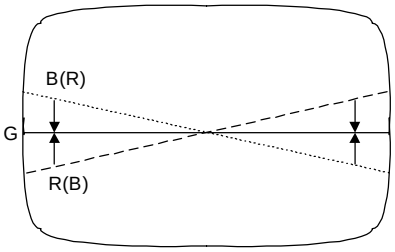


Fig.4

(FRONT VIEW)

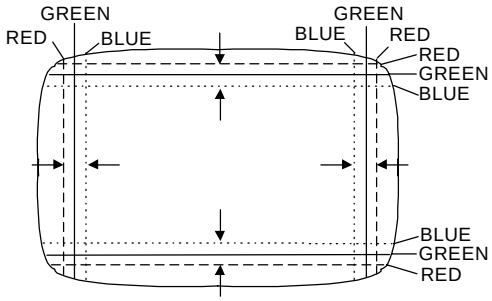


Fig.3

HOW TO CHECK THE HIGH VOLTAGE HOLD DOWN CIRCUIT

1. HIGH VOLTAGE HOLD DOWN CIRCUIT

After repairing the high voltage hold down circuit shown in Fig. 1.
This circuit shall be checked to operate correctly.

2. CHECKING OF THE HIGH VOLTAGE HOLD DOWN CIRCUIT

(1) Turn the POWER SW ON.
(1) As shown in Fig.2, set the resistor (between【X】connector【1】&【3】).
(3) Make sure that the screen picture disappears.
(4) Temporarily unplug the power cord.
(5) Remove the resistor (between【X】connector【1】&【3】).
(6) Again plug the power cord, make sure that the normal picture is displayed on the screen.

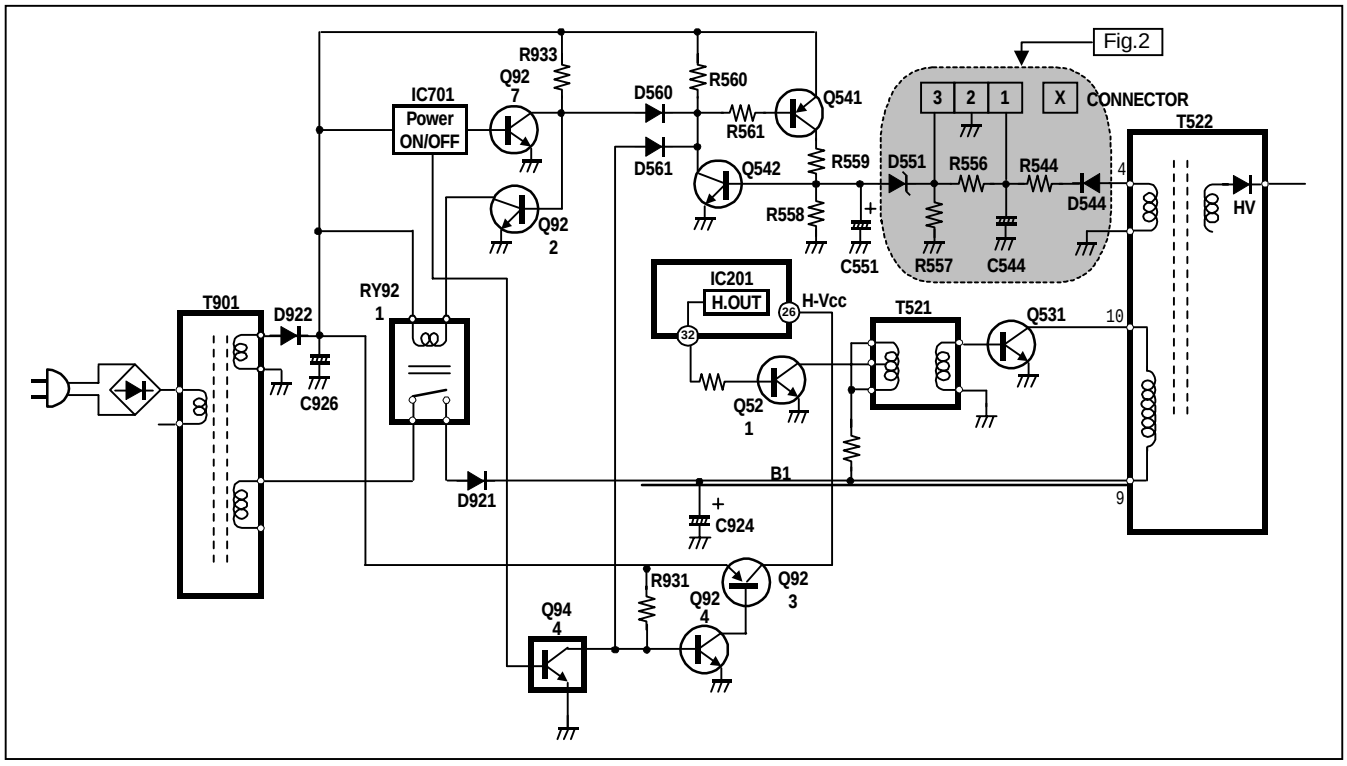


Fig.1

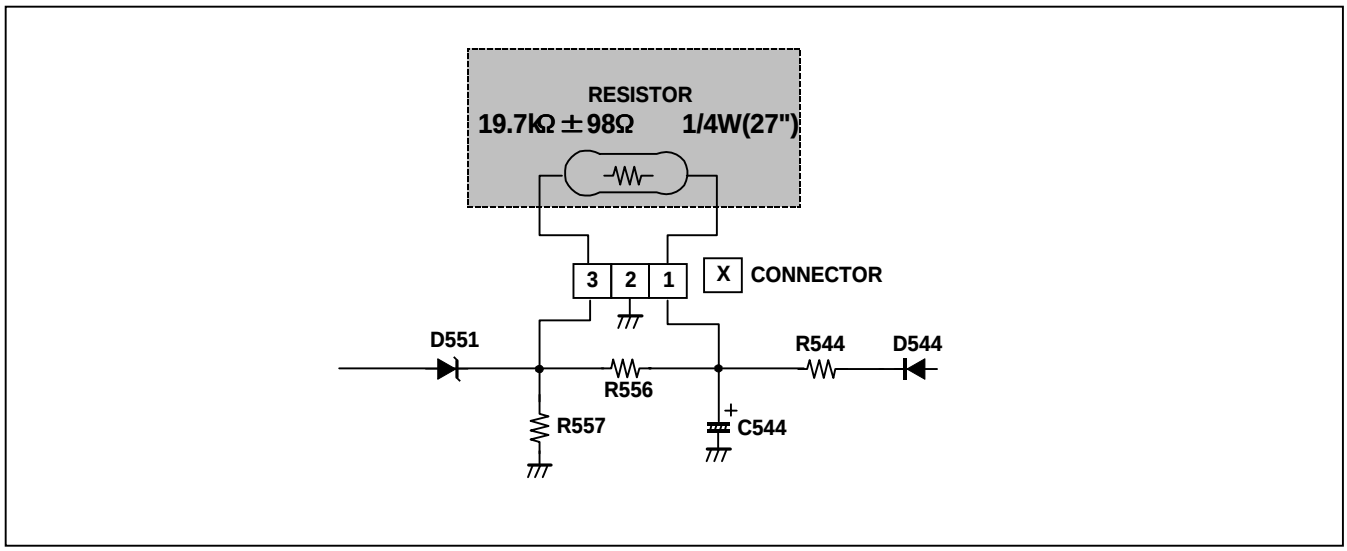


Fig.2

SELF CHECK FUNCTIONS

1. Outline

This model has self check functions given below. When a malfunction has been detected, the POWER is turned off and the LED flashes to inform of the failure . The malfunction is detected by the signal input state of the control line connected to the microcomputer.

2. Self check items

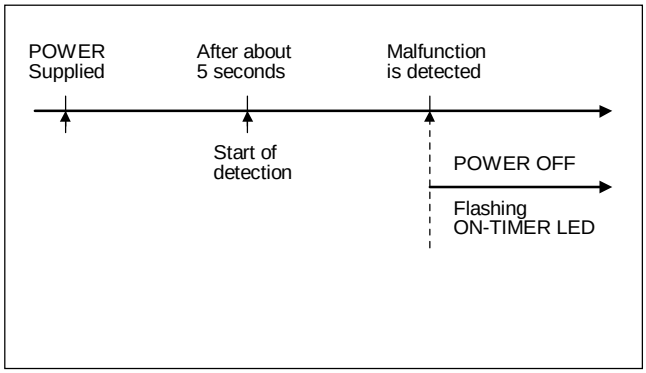
Check item	Details of detection	Method of detection	State of malfunction
Over-current protection (HAZARD)	Operation of B1 protector circuit.	The microcomputer detects at 1 second intervals. If NG is detected for more than 1 ms, a malfunction is interpreted.	When a malfunction has been detected, the POWER is turned off. While the POWER is being turned off , the power key of the remote controller is not operational until the power code is taken out and put in again.

3. Self check indicating function

The self-check function begins detection about 5 seconds after power is supplied.

In the event a malfunction is detected, the power is cut off immediately.

At this time, the ON-TIMER LED flashes to inform of the malfunction.



[ON-TIMER LED indication]

The ON-TIMER LED flashes at 0.5 seconds intervals.

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SCHEMATIC DIAGRAMS

COLOR TELEVISION

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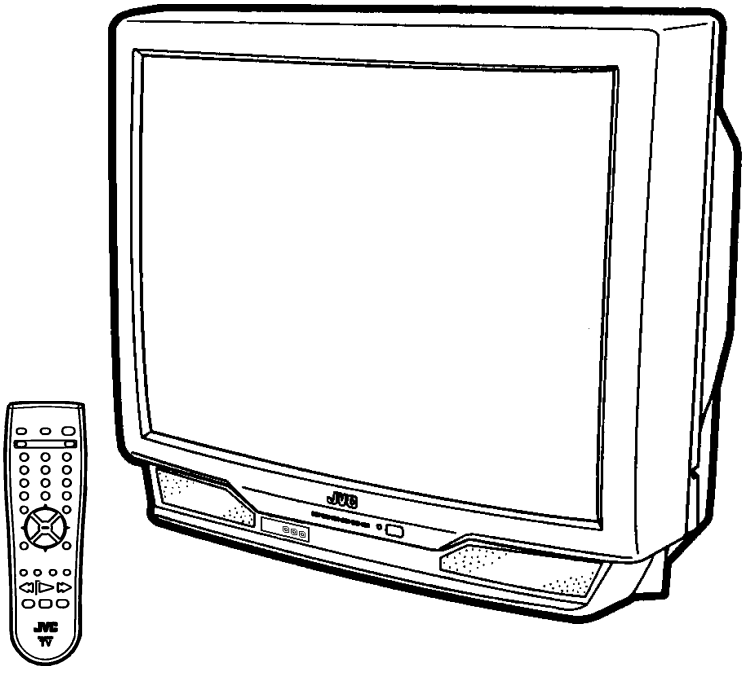

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No.51806
Jun. 2001

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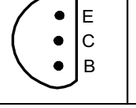
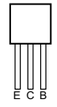
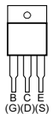
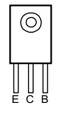
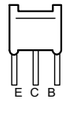
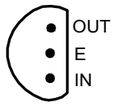
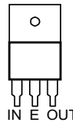
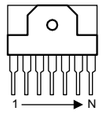
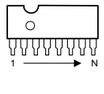
SEMICONDUCTOR SHAPES

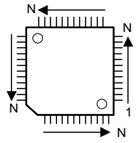
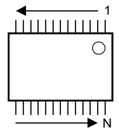
TRANSISTOR

BOTTOM VIEW	FRONT VIEW				TOP VIEW
					CHIP TR

IC

BOTTOM VIEW	FRONT VIEW			TOP VIEW
				

CHIP IC

TOP VIEW		
		

AV-27GFH/z STANDARD CIRCUIT DIAGRAM

■ NOTE ON USING CIRCUIT DIAGRAMS

1.SAFETY

The components identified by the⚠ symbol and shading are critical for safety. For continued safety replace safety critical components only with manufactures recommended parts.

2.SPECIFIED VOLTAGE AND WAVEFORM VALUES

The voltage and waveform values have been measured under the following conditions.

(1)Input signal : Color bar signal
(2)Setting positions of each knob/button and variable resistor :Original setting position when shipped
(3)Internal resistance of tester :DC 20kΩ/V
(4)Oscilloscope sweeping time :H ⇒ 20μS/div
:V ⇒ 5mS/div
:Others ⇒ Sweeping time is specified
(5)Voltage values :All DC voltage values

∗ Since the voltage values of signal circuit vary to some extent according to adjustments, use them as reference values.

3.INDICATION OF PARTS SYMBOL [EXAMPLE]

●In the PW board :R1209→R209

4.INDICATIONS ON THE CIRCUIT DIAGRAM

(1)Resistors

●Resistance value
No unit :[Ω]
K :[KΩ]
M :[MΩ]
●Rated allowable power
No indication :1/10 [W]
Others :As specified
●Type
No indication :Carbon resistor
OMR :Oxide metal film resistor
MFR :Metal film resistor
MPR :Metal plate resistor
UNFR :Uninflammable resistor
FR :Fusible resistor
*Composition resistor 1/2 [W] is specified as 1/2S or Comp.

(2)Capacitors

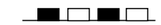
●Capacitance value
1 or higher :[pF]
less than 1 :[μF]
●Withstand voltage
No indication :DC50[V]
Others :DC withstand voltage [V]
AC indicated :AC withstand voltage [V]
*Electrolytic Capacitors
47/50[Example]:Capacitance value [μF]/withstand voltage[V]

●Type
No indication :Ceramic capacitor
MY :Mylar capacitor
MM :Metalized mylar capacitor
PP :Polypropylene capacitor
MPP :Metalized polypropylene capacitor
MF :Metalized film capacitor
TF :Thin film capacitor
BP :Bipolar electrolytic capacitor
TAN :Tantalum capacitor

(3)Coils

No unit :[μH]
Others :As specified

(4)Power Supply

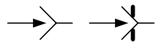
 :B1 :B2(12V)
 :9V :5V

*Respective voltage values are indicated

(5)Test point

:Test point :Only test point display

(6)Connecting method

:Connector :Wrapping or soldering
 :Receptacle

(7)Ground symbol

:LIVE side ground
 :ISOLATED(NEUTRAL) side ground
 :EARTH ground
:DIGITAL ground

5.NOTE FOR REPAIRING SERVICE

This model's power circuit is partly different in the GND. The difference of the GND is shown by the LIVE : (⊥) side GND and the ISOLATED(NEUTRAL) : (⏚) side GND. Therefore, care must be taken for the following points.

(1)Do not touch the LIVE side GND or the LIVE side GND and the ISOLATED(NEUTRAL) side GND simultaneously. If the above caution is not respected, an electric shock may be caused. Therefore, make sure that the power cord is surely removed from the receptacle when, for example, the chassis is pulled out.
(2)Do not short between the LIVE side GND and ISOLATED(NEUTRAL) side GND or never measure with a measuring apparatus (oscilloscope, etc.) the LIVE side GND and ISOLATED(NEUTRAL) side GND at the same time. If the above precaution is not respected , a fuse or any parts will be broken.

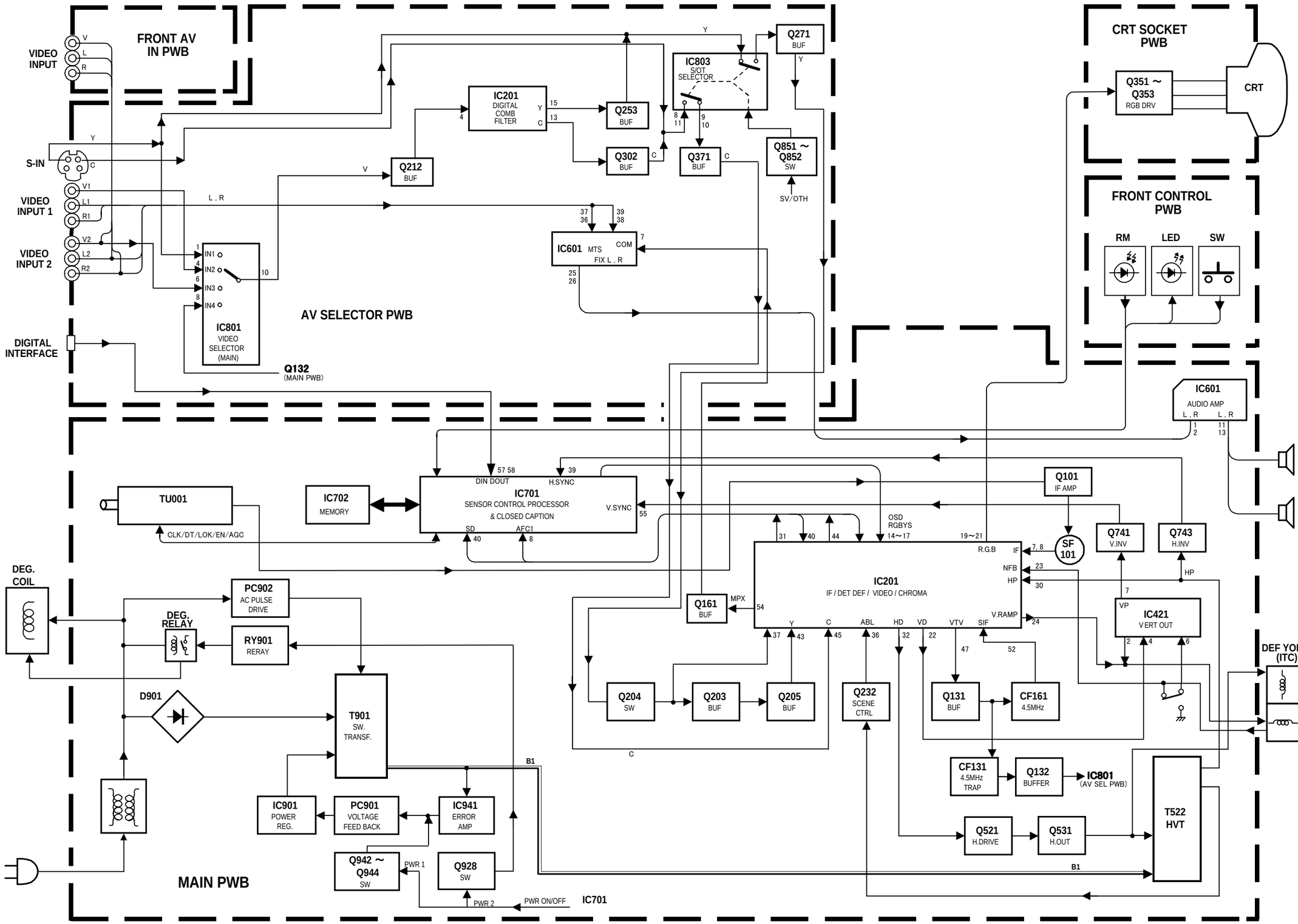
◇**Since the circuit diagram is a standard one, the circuit and circuit constants may be subject to change for improvement without any notice.**

◇**NOTE**

Due improvement in performance, some part numbers show in the circuit diagram may not agree with those indicated in the part list.

When ordering parts, please use the numbers that appear in the Parts List.

BLOCK DIAGRAM

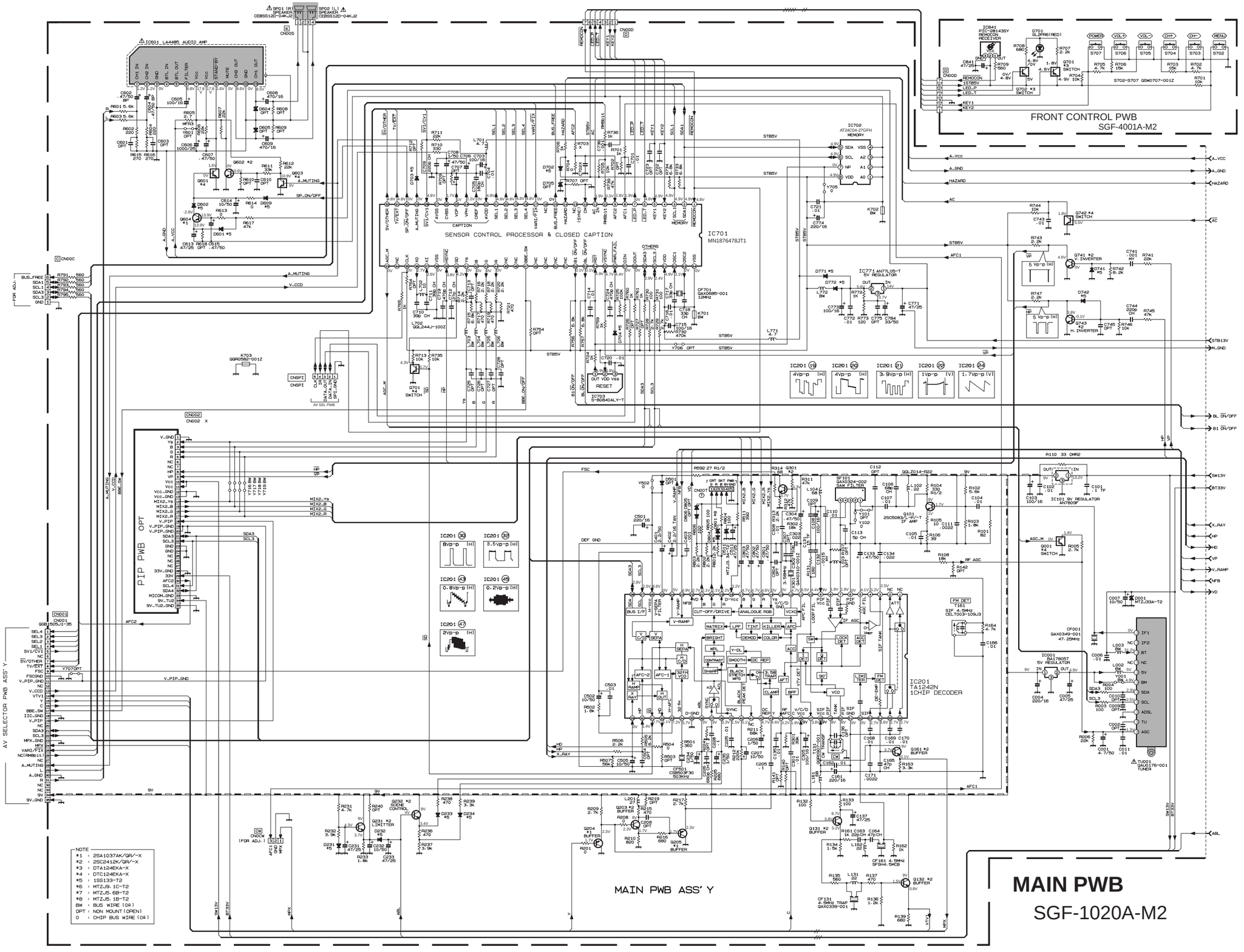


CIRCUIT DIAGRAMS

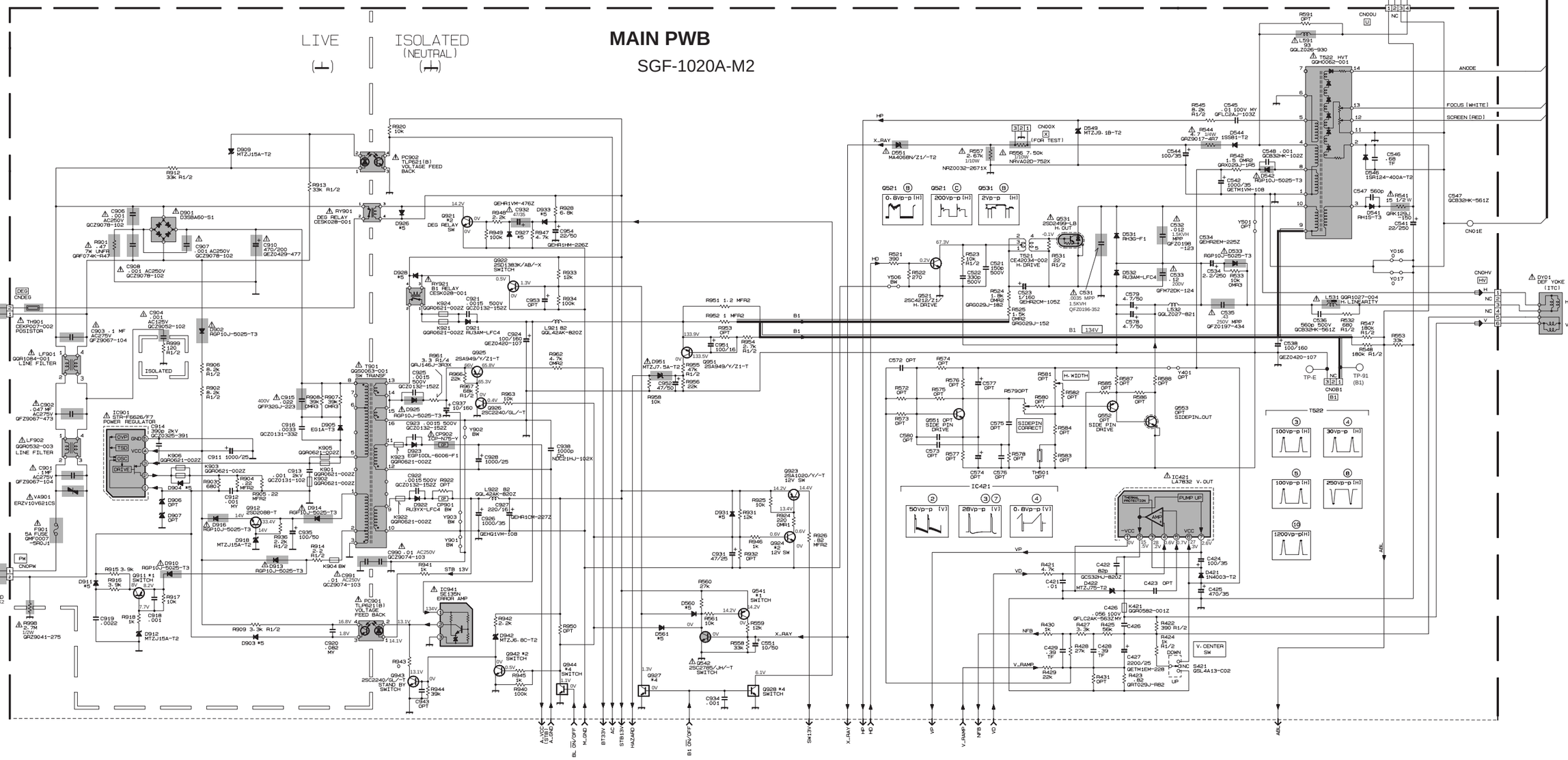
MAIN PWB &

FRONT CONTROL PWB

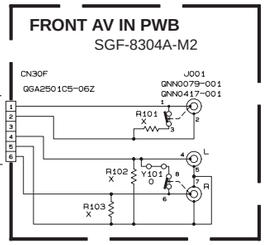
CIRCUIT DIAGRAM



MAIN PWB & CRT SOCKET PWB CIRCUIT DIAGRAM

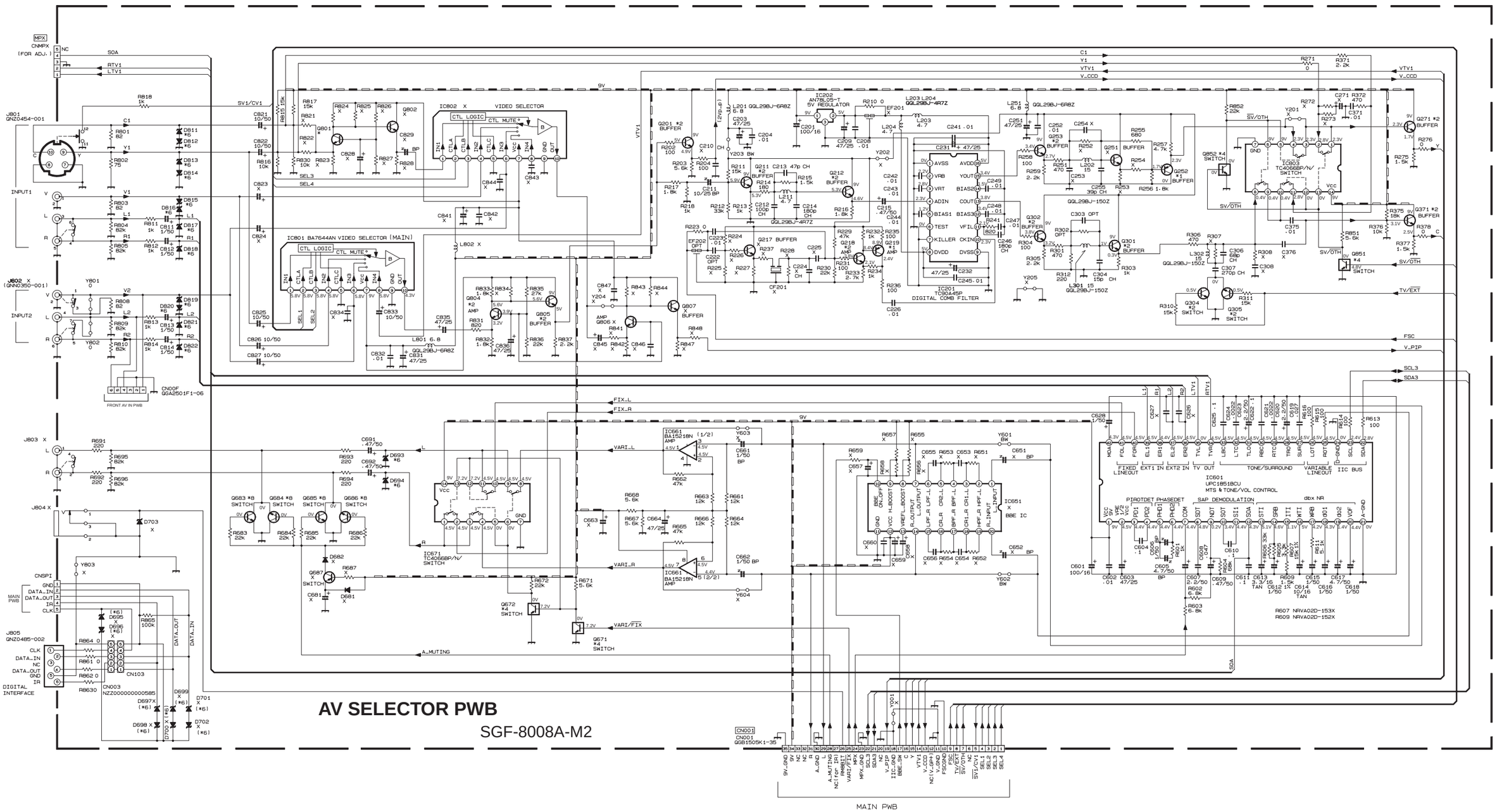


AV SELECTOR PWB & FRONT AV IN PWB CIRCUIT DIAGRAM

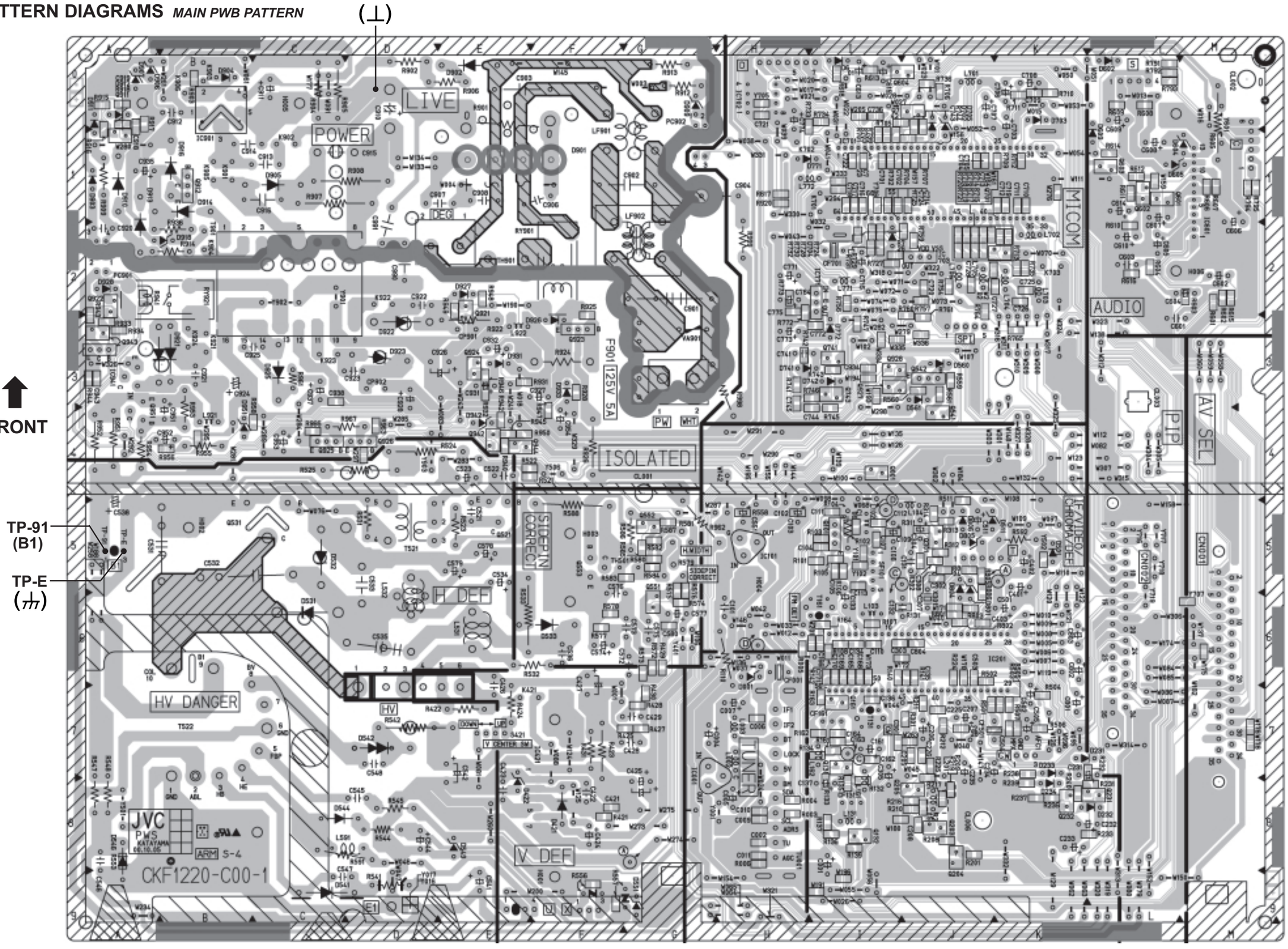


CAUTION:
PLEASE REFER 'THE DIFFERENCE LIST'
FOR * MARKED PARTS DEPENDING ON THE MODEL.

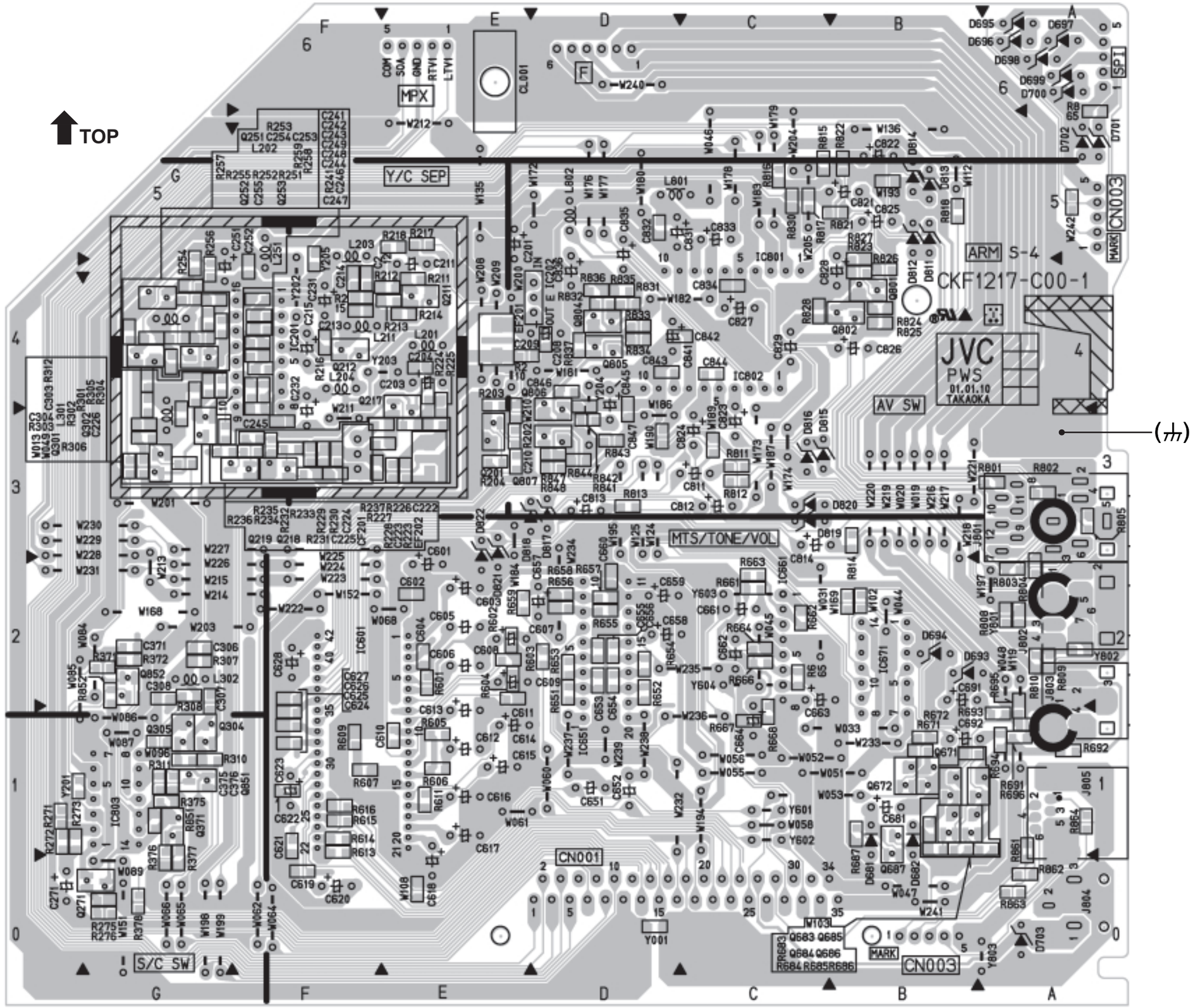
NOTE
*1 : 2SA1037AK/GR/-X
*2 : 2SC2412K/GR/-X
*3 : DTA124EKA-X
*4 : DTC124EKA-X
*5 : 1SS133-T2
*6 : MTZJ9.1C-T2
*7 : MTZJ5.6B-T2
*8 : DTC323TK-X
BW : BUS WIRE (0Ω)
OPT : NON MOUNT (OPEN)
0 : CHIP BUS WIRE (0Ω)



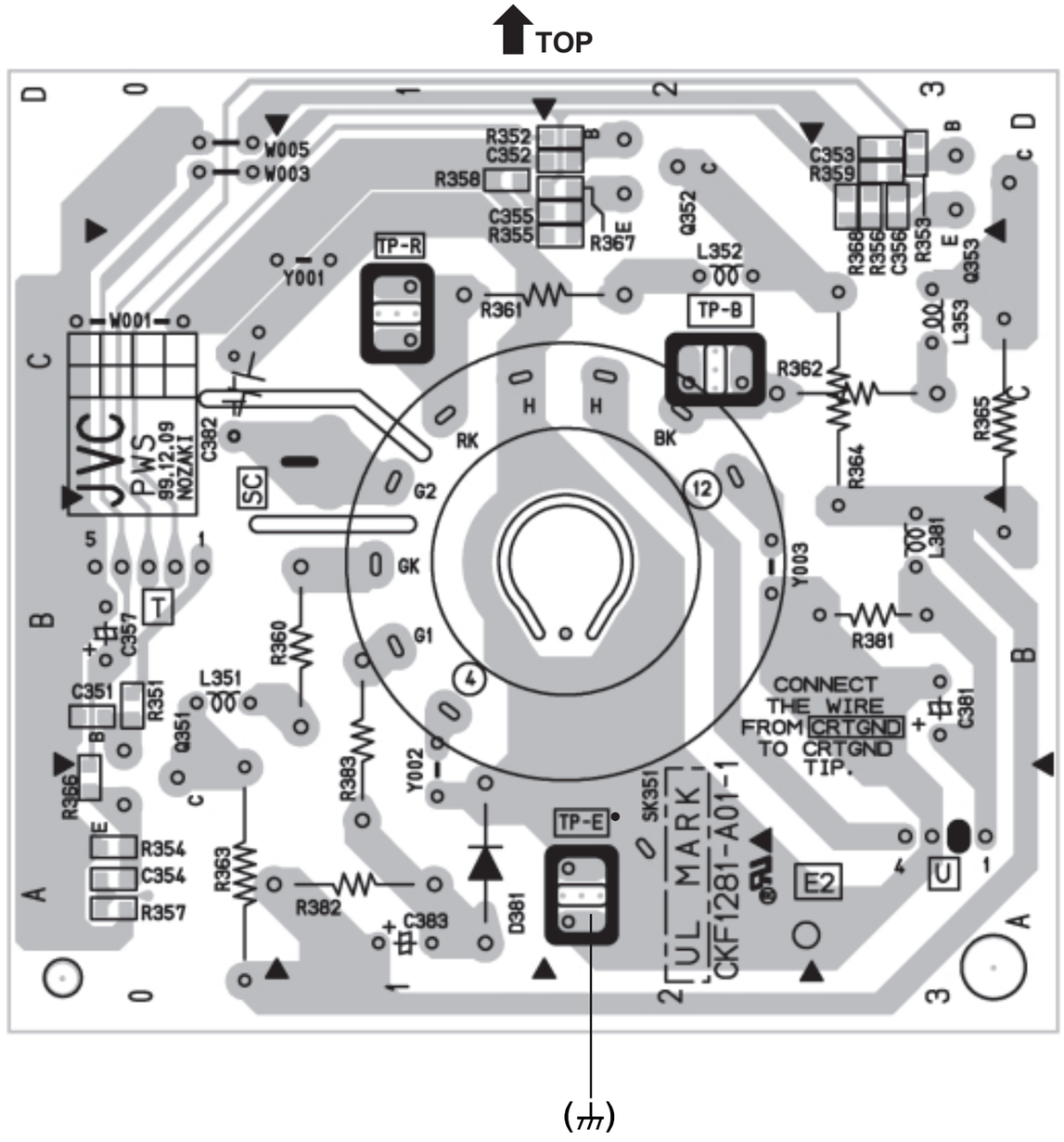
PATTERN DIAGRAMS *MAIN PWB PATTERN*



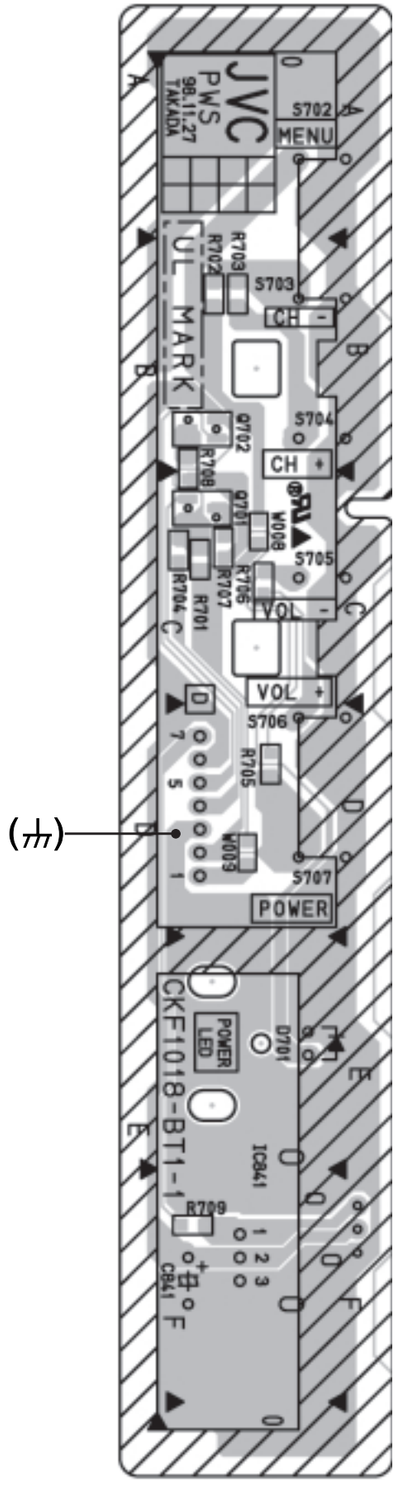
AV SELECTOR PWB PATTERN



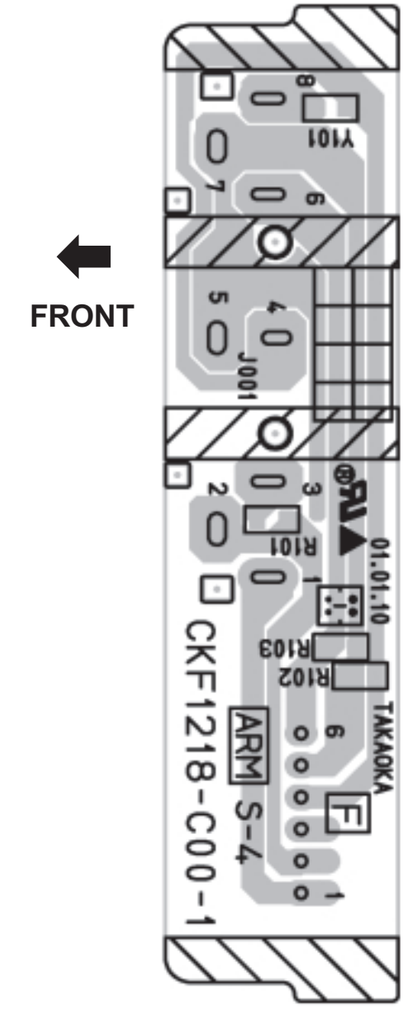
CRT SOCKET PWB PATTERN



FRONT CONTROL PWB PATTERN



FRONT AV IN PWB PATTERN



■CHANNEL CHART (US)

MODE		BAND	CHANNEL		TUNER BAND
TV	CATV		REAL	DISP.	
○	○	VL	02		Ⅰ
			03		
			04		
			05		
			06		
		VH	07		Ⅱ
			08		
			09		
			10		
			11		
			12		
			13		
×	○	MID	A	14	Ⅰ
			B	15	
			C	16	Ⅱ
			D	17	
			E	18	
			F	19	
			G	20	
			H	21	
			I	22	
		SUPER	J	23	
			K	24	
			L	25	
			M	26	
			N	27	
			O	28	
			P	29	
			Q	30	
			R	31	
			S	32	
			T	33	
			U	34	
			V	35	
			W	36	
		HYPER	W+1	37	Ⅳ
			W+2	38	
			W+3	39	
			W+4	40	
			W+5	41	
			W+6	42	
			W+7	43	
			W+8	44	
			W+9	45	
			W+10	46	
			W+11	47	
			W+12	48	
			W+13	49	
			W+14	50	
			W+15	51	
			W+16	52	
			W+17	53	
			W+18	54	
			W+19	55	
			W+20	56	
			W+21	57	
			W+22	58	
			W+23	59	
			W+24	60	
			W+25	61	
			W+26	62	
			W+27	63	
			W+28	64	
		ULTRA	W+29	65	Ⅳ
			W+30	66	
			W+31	67	
			W+32	68	
			W+33	69	
			W+34	70	

MODE		BAND	CHANNEL		TUNER BAND
TV	CATV		REAL	DISP.	
×	○	ULTRA	W+35	71	Ⅳ
			W+36	72	
			W+37	73	
			W+38	74	
			W+39	75	
			W+40	76	
			W+41	77	
			W+42	78	
			W+43	79	
			W+44	80	
			W+45	81	
			W+46	82	
			W+47	83	
			W+48	84	
			W+49	85	
			W+50	86	
			W+51	87	
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			W+53	89	
			W+54	90	
			W+55	91	
			W+56	92	
			W+57	93	
			W+58	94	
			W+59	100	
			W+60	101	
			W+61	102	
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			W+63	104	
			W+64	105	
			W+65	106	
			W+66	107	
			W+67	108	
			W+68	109	
			W+69	110	
			W+70	111	
			W+71	112	
			W+72	113	
			W+73	114	
			W+74	115	
			W+75	116	
			W+76	117	
			W+77	118	
			W+78	119	
			W+79	120	
			W+80	121	
			W+81	122	
			W+82	123	
			W+83	124	
			W+84	125	
		SUB MID	A-8	01	Ⅰ
			A-4	96	
			A-3	97	
			A-2	98	
			A-1	99	
○	×	UHF	14 ∫ 69		Ⅳ

TOTAL 180CH
{ VHF 124CH
UHF 56CH

NOTE:
TO RECEIVE THE SUBSCRIPTION OR PREMIUM PROGRAMMING FROM CERTAIN CABLE COMPANIES.
SPECIAL ADAPTERS MAY BE REQUIRED.

■CHANNEL CHART (CAU

S) ME		DANM	CHANNEL		TPNER DANM
TO	CATO		REAL	MNBI.	
○	○	VL	02		Ⅰ
			03		
			04		
			05		
			06		
		VH	07		Ⅱ
			08		
			09		
			10		
			11		
			12		
			13		
×	○	MID	A	14	Ⅱ
			B	15	
			C	16	
			D	17	
			E	18	
			F	19	
			G	20	
			H	21	
			I	22	
		PSUER	J	23	
			K	24	
			L	25	
			M	26	
			N	27	
			O	28	
			U	29	
			Q	30	
			R	31	
			P	32	
			T	33	
			S	34	
			V	35	
			W	36	
		HYUER	W+1	37	Ⅳ
			W+2	38	
			W+3	39	
			W+4	40	
			W+5	41	
			W+6	42	
			W+7	43	
			W+8	44	
			W+9	45	
			W+10	46	
			W+11	47	
			W+12	48	
			W+13	49	
			W+14	50	
			W+15	51	
			W+16	52	
			W+17	53	
			W+18	54	
			W+19	55	
			W+20	56	
			W+21	57	
			W+22	58	
			W+23	59	
			W+24	60	
			W+25	61	
			W+26	62	
			W+27	63	
			W+28	64	
		SLTRA	W+29	65	Ⅳ
			W+30	66	
			W+31	67	
			W+32	68	
			W+33	69	
			W+34	70	

S) ME		DANM	CHANNEL		TPNER DANM
TO	CATO		REAL	MNBI.	
×	○	SLTRA	W+35	71	Ⅳ
			W+36	72	
			W+37	73	
			W+38	74	
			W+39	75	
			W+40	76	
			W+41	77	
			W+42	78	
			W+43	79	
			W+44	80	
			W+45	81	
			W+46	82	
			W+47	83	
			W+48	84	
			W+49	85	
			W+50	86	
			W+51	87	
			W+52	88	
			W+53	89	
			W+54	90	
			W+55	91	
			W+56	92	
			W+57	93	
			W+58	94	
			W+59	100	
			W+60	101	
			W+61	102	
			W+62	103	
			W+63	104	
			W+64	105	
			W+65	106	
			W+66	107	
			W+67	108	
			W+68	109	
			W+69	110	
			W+70	111	
			W+71	112	
			W+72	113	
			W+73	114	
			W+74	115	
			W+75	116	
			W+76	117	
			W+77	118	
			W+78	119	
			W+79	120	
			W+80	121	
			W+81	122	
			W+82	123	
			W+83	124	
			W+84	125	
		PSB MID	A-8	01	Ⅰ
			A-4	96	
			A-3	97	Ⅱ
			A-2	98	
			A-1	99	
○	×	SHF	14 ∫ 69		Ⅳ

TOTAL 180CH
{ VHF 124CH
SHF 56CH

NOTE:
TO RECEIVE THE PSBPCRIUTION OR UREMISM UROGRAMMING FROM CERTAIN CABLE COMUANIEP.
PUECIAL ADAUTERP MAY BE REQSIRED.

VP0106
DP6051

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West Coast :	5665 Corporate Avenue, Cypress, California 90630	(714)229-8011
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JVC®

VP 0106
DP6051

PARTS LIST

CAUTION

- The parts identified by the ⚠ symbol are important for the safety . Whenever replacing these parts, be sure to use specified ones to secure the safety .
- The parts not indicated in this Parts List and those which are filled with lines --- in the Parts No. columns will not be supplied .
- P. W. Board Ass'y will not be supplied, but those which are filled with the Parts No. in the Parts No. columns will be supplied .

ABBREVIATIONS OF RESISTORS, CAPACITORS AND TOLERANCES

RESISTORS		CAPACITORS	
C R	Carbon Resistor	C CAP.	Ceramic Capacitor
F R	Fusible Resistor	E CAP.	Electrolytic Capacitor
P R	Plate Resistor	M CAP.	Mylar Capacitor
V R	Variable Resistor	HV CAP.	High Voltage Capacitor
HV R	High Voltage Resistor	MF CAP.	Metalized Film Capacitor
MF R	Metal Film Resistor	MM CAP.	Metalized Mylar Capacitor
MG R	Metal Glazed Resistor	MP CAP.	Metalized Polystyrol Capacitor
MP R	Metal Plate Resistor	PP CAP.	Polypropylene Capacitor
OM R	Metal Oxide Film Resistor	PS CAP.	Polystyrol Capacitor
CMF R	Coating Metal Film Resistor	TF CAP.	Thin Film Capacitor
UNF R	Non-Flammable Resistor	MPP CAP.	Metalized Polypropylene Capacitor
CH V R	Chip Variable Resistor	TAN. CAP.	Tantalum Capacitor
CH MG R	Chip Metal Glazed Resistor	CH C CAP.	Chip Ceramic Capacitor
COMP. R	Composition Resistor	BP E CAP.	Bi-Polar Electrolytic Capacitor
LPTC R	Linear Positive Temperature Coefficient Resistor	CH AL E CAP.	Chip Aluminum Electrolytic Capacitor
		CH AL BP CAP.	Chip Aluminum Bi-Polar Capacitor
		CH TAN. E CAP.	Chip Tantalum Electrolytic Capacitor
		CH AL BP E CAP.	Chip Tantalum Bi-Polar Electrolytic Capacitor

TOLERANCES									
F	G	J	K	M	N	R	H	Z	P
±1%	±2%	±5%	±10%	±20%	±30%	+30% -10%	+50% -10%	+80% -20%	+100% -0%

CONTENTS

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- CRT SOCKET PW BOARD ASS'Y ····· 39
- FRONT CONTROL PW BOARD ASS'Y ····· 39
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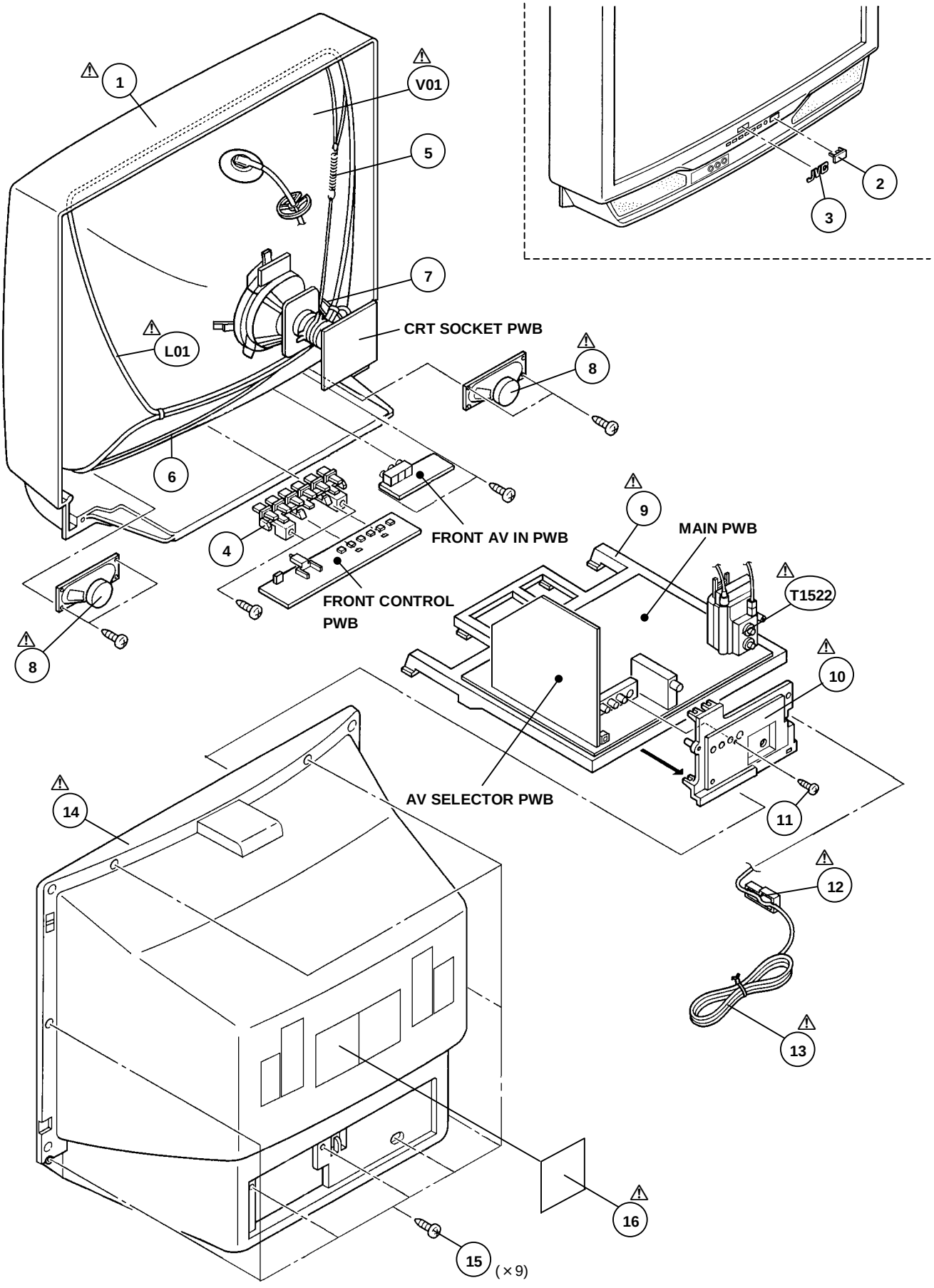
USING P.W. BOARD & REMOTE CONTROL UNIT

Model / P.W.B ASS'Y	AV-27GFH/Z
MAIN P.W.B	SGF-1020A-M2
CRT SOCKET P.W.B	SGF-3001A-M2
FRONT CONTROL P.W.B	SGF-4001A-M2
AV SELECTOR P.W.B	SGF-8008A-M2
FRONT AV IN P.W.B	SGF-8304A-M2
REMOTE CONTROL UNIT (OPTIONAL)	RM-C205-1C

EXPLODED VIEW PARTS LIST

⚠	Ref.No.	Part No.	Part Name	Description
⚠	V01	A68AJB82X02	PICTURE TUBE(C)	Inc.DY, PC MAGNET, WEDGE
⚠	L01	CE41329-00DJB	DEG.COIL	
⚠	T1522	QQH0062-001	H.V.TRANSF.	
⚠	1	LC10488-007A-A	FRONT CABINET	
	2	CM35983-001-H	REMOCON WINDOW	
	3	CM48006-006-C	JVC MARK	
	4	LC20674-001A-A	PUSH KNOB	
	5	A48457-4-S	SPRING	
	6	WJY0016-001A	E-BRAIDED ASSY	
	7	WJY0013-003A	E-BRAIDED ASSY(SUB)	
⚠	8	CEBSS12D-04KJ2	SPEAKER	(×2)SP01,SP02
⚠	9	LC10363-001D-A	CHASSIS BASE	
⚠	10	LC20087-008A-A	TERMINAL BOARD	
	11	QYSBSB3010Z	TAPPING SCREW	(×1)
⚠	12	CM48140-A03-A	POWER CORD CLAMP	
⚠	13	QMPD270-400-K2	POWER CORD	
⚠	14	CM12920-F01-MA	REAR COVER	
	15	QYSBSFG4016Z	TAPPING SCREW	(×9)
⚠	16	LC31139-001A-A	RATING LABEL	

EXPLODED VIEW



PRINTED WIRING BOARD PARTS LIST

MAIN PW BOARD ASS'Y (SGF-1020A-M2)

⚠	Symbol No.	Part No.	Part Name	Description
	RESISTOR			
	R1003-04	NRSA02J-101X	MG R	100Ω 1/10W J
	R1005	NRSA02J-272X	MG R	2.7kΩ 1/10W J
	R1006	NRSA02J-223X	MG R	22kΩ 1/10W J
	R1101	NRSA02J-820X	MG R	82Ω 1/10W J
	R1102	NRSA02J-562X	MG R	5.6kΩ 1/10W J
	R1103	NRSA02J-182X	MG R	1.8kΩ 1/10W J
	R1104	QRE121J-331Y	C R	330Ω 1/2W J
	R1105	NRSA02J-100X	MG R	10Ω 1/10W J
	R1106	NRSA02J-390X	MG R	39Ω 1/10W J
	R1108	NRSA02J-183X	MG R	18kΩ 1/10W J
	R1110	QRL029J-330	OM R	33Ω 2W J
	R1131	NRSA02J-181X	MG R	180Ω 1/10W J
	R1132-33	NRSA02J-101X	MG R	100Ω 1/10W J
	R1134	NRSA02J-152X	MG R	1.5kΩ 1/10W J
	R1135	NRSA02J-561X	MG R	560Ω 1/10W J
	R1136	NRSA02J-122X	MG R	1.2kΩ 1/10W J
	R1137	NRSA02J-471X	MG R	470Ω 1/10W J
	R1139	NRSA02J-681X	MG R	680Ω 1/10W J
	R1161	NRSA02J-102X	MG R	1kΩ 1/10W J
	R1162	NRSA02J-102X	MG R	1kΩ 1/10W J
	R1163	NRSA02J-332X	MG R	3.3kΩ 1/10W J
	R1164	NRSA02J-472X	MG R	4.7kΩ 1/10W J
	R1201	NRSA02J-0R0X	MG R	0.0Ω 1/10W J
	R1208	NRSA02J-0R0X	MG R	0.0Ω 1/10W J
	R1209	NRSA02J-272X	MG R	2.7kΩ 1/10W J
	R1210	NRSA02J-821X	MG R	820Ω 1/10W J
	R1211	NRSA02J-683X	MG R	68kΩ 1/10W J
	R1212	NRSA02J-224X	MG R	220kΩ 1/10W J
	R1215	NRSA02J-471X	MG R	470Ω 1/10W J
	R1216	NRSA02J-681X	MG R	680Ω 1/10W J
	R1217	NRSA02J-272X	MG R	2.7kΩ 1/10W J
	R1225	NRSA02J-681X	MG R	680Ω 1/10W J
	R1231	NRSA02J-472X	MG R	4.7kΩ 1/10W J
	R1232	NRSA02J-392X	MG R	3.9kΩ 1/10W J
	R1233	NRSA02J-182X	MG R	1.8kΩ 1/10W J
	R1236	NRSA02J-471X	MG R	470Ω 1/10W J
	R1237	NRSA02J-392X	MG R	3.9kΩ 1/10W J
	R1238	NRSA02J-471X	MG R	470Ω 1/10W J
	R1239	NRSA02J-332X	MG R	3.3kΩ 1/10W J
	R1301	NRSA02J-393X	MG R	39kΩ 1/10W J
	R1302	NRSA02J-183X	MG R	18kΩ 1/10W J
	R1311-12	NRSA02J-473X	MG R	47kΩ 1/10W J
	R1313	NRSA02J-222X	MG R	2.2kΩ 1/10W J
	R1314	NRSA02J-680X	MG R	68Ω 1/10W J
	R1421	NRSA02J-472X	MG R	4.7kΩ 1/10W J
	R1422	QRE121J-391Y	C R	390Ω 1/2W J
	R1423	QRT029J-R82	MF R	0.82Ω 2W J
	R1424	QRE121J-102Y	C R	1kΩ 1/2W J
	R1425	NRSA02J-563X	MG R	56kΩ 1/10W J
	R1427	NRSA02J-332X	MG R	3.3kΩ 1/10W J
	R1428	NRSA02J-273X	MG R	27kΩ 1/10W J
	R1429	NRSA02J-223X	MG R	22kΩ 1/10W J
	R1430	NRSA02J-102X	MG R	1kΩ 1/10W J
	R1501	NRSA02J-361X	MG R	360Ω 1/10W J
	R1502	NRSA02J-182X	MG R	1.8kΩ 1/10W J
	R1504	NRSA02J-0R0X	MG R	0.0Ω 1/10W J
	R1505	NRSA02J-822X	MG R	8.2kΩ 1/10W J
	R1506	NRSA02J-222X	MG R	2.2kΩ 1/10W J
	R1507	NRSA02J-563X	MG R	56kΩ 1/10W J
	R1511	NRSA02J-391X	MG R	390Ω 1/10W J
	R1521	NRSA02J-391X	MG R	390Ω 1/10W J
	R1522	NRSA02J-271X	MG R	270Ω 1/10W J
	R1523	QRE121J-103Y	C R	10kΩ 1/2W J
	R1524	QRG029J-182	OM R	1.8kΩ 2W J
	R1525	QRG029J-152	OM R	1.5kΩ 2W J
	R1531	QRE121J-220Y	C R	22Ω 1/2W J
	R1532	QRE121J-681Y	C R	680Ω 1/2W J
	R1533	QRL039J-103	OM R	10kΩ 3W J
⚠	R1541	QRK129J-150	C R	15Ω 1/2W J
	R1542	QRX029J-1R5	MF R	1.5 Ω 2W J

⚠	Symbol No.	Part No.	Part Name	Description
	RESISTOR			
⚠	R1544	QRZ9017-4R7	F R	4.7 Ω 1/4W J
	R1545	QRE121J-822Y	C R	8.2kΩ 1/2W J
	R1547-48	QRE121J-184Y	C R	180kΩ 1/2W J
	R1553	NRSA02J-333X	MG R	33kΩ 1/10W J
⚠	R1556	NRVA02D-752X	MF R	7.5kΩ 1/10W D
⚠	R1557	NRZ0032-2671X	MF R	2.67kΩ 1/10W±0.5%
	R1558	NRSA02J-333X	MG R	33kΩ 1/10W J
	R1559	NRSA02J-123X	MG R	12kΩ 1/10W J
	R1560	NRSA02J-273X	MG R	27kΩ 1/10W J
	R1561	NRSA02J-103X	MG R	10kΩ 1/10W J
	R1592	QRE121J-270Y	C R	27Ω 1/2W J
	R1601	NRSA02J-562X	MG R	5.6kΩ 1/10W J
	R1602	NRSA02J-221X	MG R	220Ω 1/10W J
	R1603	NRSA02J-562X	MG R	5.6kΩ 1/10W J
	R1604	NRSA02J-221X	MG R	220Ω 1/10W J
	R1605	QRT039J-2R7	MF R	2.7Ω 3W J
	R1606	NRSA02J-223X	MG R	22kΩ 1/10W J
	R1607	NRSA02J-223X	MG R	22kΩ 1/10W J
	R1611	NRSA02J-333X	MG R	33kΩ 1/10W J
	R1612	NRSA02J-223X	MG R	22kΩ 1/10W J
	R1613-14	NRSA02J-0R0X	MG R	0.0Ω 1/10W J
	R1615-16	NRSA02J-271X	MG R	270Ω 1/10W J
	R1617	NRSA02J-473X	MG R	47kΩ 1/10W J
	R1701	NRSA02J-102X	MG R	1kΩ 1/10W J
	R1704	NRSA02J-0R0X	MG R	0.0Ω 1/10W J
	R1705	NRSA02J-103X	MG R	10kΩ 1/10W J
	R1706	NRSA02J-102X	MG R	1kΩ 1/10W J
	R1710	NRSA02J-331X	MG R	330Ω 1/10W J
	R1711	NRSA02J-223X	MG R	22kΩ 1/10W J
	R1713	NRSA02J-103X	MG R	10kΩ 1/10W J
	R1714	NRSA02J-222X	MG R	2.2kΩ 1/10W J
	R1715	NRSA02J-682X	MG R	6.8kΩ 1/10W J
	R1716	NRSA02J-222X	MG R	2.2kΩ 1/10W J
	R1717	NRSA02J-471X	MG R	470Ω 1/10W J
	R1718	NRSA02J-222X	MG R	2.2kΩ 1/10W J
	R1719	NRSA02J-471X	MG R	470Ω 1/10W J
	R1720	NRSA02J-222X	MG R	2.2kΩ 1/10W J
	R1721	NRSA02J-471X	MG R	470Ω 1/10W J
	R1724	NRSA02J-102X	MG R	1kΩ 1/10W J
	R1725	NRSA02J-104X	MG R	100kΩ 1/10W J
	R1728-29	NRSA02J-272X	MG R	2.7kΩ 1/10W J
	R1730-31	NRSA02J-101X	MG R	100Ω 1/10W J
	R1732	NRSA02J-474X	MG R	470kΩ 1/10W J
	R1733-34	NRSA02J-682X	MG R	6.8kΩ 1/10W J
	R1735	NRSA02J-103X	MG R	10kΩ 1/10W J
	R1736	NRSA02J-102X	MG R	1kΩ 1/10W J
	R1739	NRSA02J-473X	MG R	47kΩ 1/10W J
	R1741	NRSA02J-223X	MG R	22kΩ 1/10W J
	R1742	NRSA02J-822X	MG R	8.2kΩ 1/10W J
	R1743	NRSA02J-222X	MG R	2.2kΩ 1/10W J
	R1744	NRSA02J-103X	MG R	10kΩ 1/10W J
	R1745	NRSA02J-473X	MG R	47kΩ 1/10W J
	R1746	NRSA02J-103X	MG R	10kΩ 1/10W J
	R1747	NRSA02J-222X	MG R	2.2kΩ 1/10W J
	R1756-57	NRSA02J-682X	MG R	6.8kΩ 1/10W J
	R1759	NRSA02J-102X	MG R	1kΩ 1/10W J
	R1760	NRSA02J-102X	MG R	1kΩ 1/10W J
	R1761	NRSA02J-102X	MG R	1kΩ 1/10W J
	R1765	NRSA02J-102X	MG R	1kΩ 1/10W J
	R1772	NRSA02J-102X	MG R	1kΩ 1/10W J
	R1773	NRSA02J-121X	MG R	120Ω 1/10W J
	R1791-95	NRSA02J-561X	MG R	560Ω 1/10W J
	R1801-03	NRSA02J-222X	MG R	2.2kΩ 1/10W J
	R1804-06	NRSA02J-101X	MG R	100Ω 1/10W J
⚠	R1901	QRF074K-R47	UNF R	0.47Ω 7W K
	R1902	QRE121J-822Y	C R	8.2kΩ 1/2W J
	R1903	NRSA02J-681X	MG R	680Ω 1/10W J
	R1904-05	QRT029J-R22	MF R	0.22Ω 2W J
	R1906	QRE121J-822Y	C R	8.2kΩ 1/2W J
	R1907-08	QRL039J-393	OM R	39kΩ 3W J

⚠	Symbol No.	Part No.	Part Name	Description
	RESISTOR			
	R1909	QRE121J-332Y	C R	3.3kΩ 1/2W J
	R1912-13	QRE121J-333Y	C R	33kΩ 1/2W J
	R1914	QRE121J-2R2Y	C R	2.2Ω 1/2W J
	R1915-16	NRSA02J-392X	MG R	3.9kΩ 1/10W J
	R1917	NRSA02J-103X	MG R	10kΩ 1/10W J
	R1918	NRSA02J-102X	MG R	1kΩ 1/10W J
	R1920	NRSA02J-103X	MG R	10kΩ 1/10W J
	R1924	QRG01GJ-221	OM R	220Ω 1W J
	R1925	NRSA02J-103X	MG R	10kΩ 1/10W J
	R1926	QRT029J-R82	MF R	0.82Ω 2W J
	R1928	NRSA02J-682X	MG R	6.8kΩ 1/10W J
	R1931	NRSA02J-123X	MG R	12kΩ 1/10W J
	R1933	NRSA02J-123X	MG R	12kΩ 1/10W J
	R1934	NRSA02J-104X	MG R	100kΩ 1/10W J
	R1936	QRE121J-222Y	C R	2.2kΩ 1/2W J
	R1940	NRSA02J-104X	MG R	100kΩ 1/10W J
	R1941	NRSA02J-102X	MG R	1kΩ 1/10W J
	R1942	NRSA02J-222X	MG R	2.2kΩ 1/10W J
	R1943	NRSA02J-0R0X	MG R	0.0Ω 1/10W J
	R1944	NRSA02J-393X	MG R	39kΩ 1/10W J
	R1945	NRSA02J-102X	MG R	1kΩ 1/10W J
	R1946	NRSA02J-102X	MG R	1kΩ 1/10W J
	R1947	NRSA02J-472X	MG R	4.7kΩ 1/10W J
	R1948	NRSA02J-222X	MG R	2.2kΩ 1/10W J
	R1949	NRSA02J-104X	MG R	100kΩ 1/10W J
	R1951	QRT029J-1R2	MF R	1.2Ω 2W J
	R1952	QRT029J-1R0	MF R	1.0Ω 2W J
	R1954	QRE121J-272Y	C R	2.7kΩ 1/2W J
	R1955	QRE121J-473Y	C R	47kΩ 1/2W J
	R1956	NRSA02J-223X	MG R	22kΩ 1/10W J
	R1958	NRSA02J-103X	MG R	10kΩ 1/10W J
	R1961	QRJ146J-3R3X	C R	3.3Ω 1/4W J
	R1962	QRL029J-472	OM R	4.7kΩ 2W J
	R1963	NRSA02J-103X	MG R	10kΩ 1/10W J
	R1966	NRSA02J-223X	MG R	22kΩ 1/10W J
	R1967	QRE121J-683Y	C R	68kΩ 1/2W J
⚠	R1998	QRZ9041-275	C R	2.7MΩ 1/2W K
	R1999	QRE121J-121Y	C R	120Ω 1/2W J
	CAPACITOR			
	C1001	QETN1HM-475Z	E CAP.	4.7µF 50V M
	C1004	QETN1CM-227Z	E CAP.	220µF 16V M
	C1005	QETN1EM-476Z	E CAP.	47µF 25V M
	C1006	NCB21HK-103X	C CAP.	0.01µF 50V K
	C1007	QETN1HM-106Z	E CAP.	10µF 50V M
	C1011	NCB21HK-103X	C CAP.	0.01µF 50V K
	C1101	QFV71HJ-104Z	MF CAP.	0.1µF 50V J
	C1102	NCB21HK-103X	C CAP.	0.01µF 50V K
	C1103	QETN1CM-107Z	E CAP.	100µF 16V M
	C1104-05	NCB21HK-103X	C CAP.	0.01µF 50V K
	C1106	NDC21HJ-680X	C CAP.	68pF 50V J
	C1107	NCB21HK-103X	C CAP.	0.01µF 50V K
	C1108	QETN1CM-107Z	E CAP.	100µF 16V M
	C1110	NCB21HK-103X	C CAP.	0.01µF 50V K
	C1111	NCB21HK-222X	C CAP.	2200pF 50V K
	C1113	NDC21HJ-5R0X	C CAP.	5.0pF 50V J
	C1131	QFV71HJ-154Z	MF CAP.	0.15µF 50V J
	C1132	QFN31HJ-152Z	M CAP.	1500pF 50V J
	C1133	QETN1HM-474Z	E CAP.	0.47µF 50V M
	C1134	NCB21HK-223X	C CAP.	0.022µF 50V K
	C1135	NCB21HK-103X	C CAP.	0.01µF 50V K
	C1137	QETN1EM-476Z	E CAP.	47µF 25V M
	C1161	QETN1CM-227Z	E CAP.	220µF 16V M
	C1162	NCB21HK-103X	C CAP.	0.01µF 50V K
	C1163	NDC21HJ-220X	C CAP.	22pF 50V J
	C1164-65	NDC21HJ-470X	C CAP.	47pF 50V J
	C1166	NCB21HK-103X	C CAP.	0.01µF 50V K
	C1168-70	NCB21HK-103X	C CAP.	0.01µF 50V K
	C1171	NCB21HK-222X	C CAP.	2200pF 50V K
	C1205	NCB21HK-104X	CHIP CAP.	0.1µF 50V K
	C1206	QETN1HM-105Z	E CAP.	1µF 50V M
	C1207	QETN1HM-106Z	E CAP.	10µF 50V M

⚠	Symbol No.	Part No.	Part Name	Description
	CAPACITOR			
	C1225	NCB21HK-104X	CHIP CAP.	0.1µF 50V K
	C1226	NDC21HJ-681X	C CAP.	680pF 50V J
	C1228	NCB21HK-104X	CHIP CAP.	0.1µF 50V K
	C1231	QETN1EM-476Z	E CAP.	47µF 25V M
	C1232	QETN1HM-106Z	E CAP.	10µF 50V M
	C1233	QETN1EM-476Z	E CAP.	47µF 25V M
	C1234-35	QETN1HM-105Z	E CAP.	1µF 50V M
	C1301	NCB21HK-103X	C CAP.	0.01µF 50V K
	C1302	NDC21HJ-100X	C CAP.	10pF 50V J
	C1303	NCB21HK-223X	C CAP.	0.022µF 50V K
	C1304	QETN1HM-474Z	E CAP.	0.47µF 50V M
	C1305	QETN1CM-107Z	E CAP.	100µF 16V M
	C1308	NCB21HK-103X	C CAP.	0.01µF 50V K
	C1401	QETN1HM-225Z	E CAP.	2.2µF 50V M
	C1402	QBHC1CK-225Z	TAN.CAP.	2.2µF 16V K
	C1403	NCB21HK-102X	C CAP.	1000pF 50V K
	C1421	NCB21HK-103X	C CAP.	0.01µF 50V K
	C1422	QCS32HJ-820Z	C CAP.	82pF 500V J
	C1424	QETN1VM-107Z	E CAP.	100µF 35V M
	C1425	QETN1VM-477Z	E CAP.	470µF 35V M
	C1426	QFLC2AK-563Z	M CAP.	0.056µF 100V K
	C1427	QETM1EM-228	E CAP.	2200µF 25V M
	C1428-29	QFV71HJ-394Z	MF CAP.	0.39µF 50V J
	C1501	QETN1CM-227Z	E CAP.	220µF 16V M
	C1502	QETN1HM-106Z	E CAP.	10µF 50V M
	C1503	NCB21HK-103X	C CAP.	0.01µF 50V K
	C1505	QETN1HM-106Z	E CAP.	10µF 50V M
	C1511	QETN1EM-476Z	E CAP.	47µF 25V M
	C1521	QCB32HK-151Z	C CAP.	150pF 500V K
	C1522	QCB32HK-331Z	C CAP.	330pF 500V K
	C1523	QEHR2CM-105Z	E CAP.	1µF 160V M
⚠	C1531	QFZ0196-352	MPP CAP.	3500pF1.5kVH±3%
⚠	C1532	QFZ0198-123	MPP CAP.	0.012µF1.5kVH±3%
⚠	C1533	QFM72DK-124	M CAP.	0.12µF 200V K
	C1534	QEHR2EM-225Z	E CAP.	2.2µF 250V M
⚠	C1535	QFZ0197-434	MPP CAP.	0.43µF 250V J
	C1536	QCB32HK-561Z	C CAP.	560pF 500V K
	C1538	QEZ042O-107	E CAP.	100µF 160V M
	C1541	QETN2EM-226Z	E CAP.	22µF 250V M
	C1542	QETM1VM-108	E CAP.	1000µF 35V M
	C1544	QETN1VM-107Z	E CAP.	100µF 35V M
	C1545	QFLC2AJ-103Z	M CAP.	0.01µF 100V J
	C1546	QFV71HJ-684Z	MF CAP.	0.68µF 50V J
	C1547	QCB32HK-561Z	C CAP.	560pF 500V K
	C1548	QCB32HK-102Z	C CAP.	1000pF 500V K
	C1551	QETN1HM-106Z	E CAP.	10µF 50V M
	C1578-79	QEM61HK-475Z	E CAP.	4.7µF 50V K
	C1602	QENC1HM-474Z	BP E CAP.	0.47µF 50V M
	C1604	QENC1HM-474Z	BP E CAP.	0.47µF 50V M
	C1605	QETN1CM-107Z	E CAP.	100µF 16V M
	C1606	QETN1EM-108Z	E CAP.	1000µF 25V M
	C1607	QETN1HM-474Z	E CAP.	0.47µF 50V M
	C1608-09	QETN1CM-477Z	E CAP.	470µF 16V M
	C1613	QETN1EM-476Z	E CAP.	47µF 25V M
	C1614	QETN1HM-106Z	E CAP.	10µF 50V M
	C1615	QETN1HM-474Z	E CAP.	0.47µF 50V M
	C1701	NCB21HK-103X	C CAP.	0.01µF 50V K
	C1703	QETN1CM-107Z	E CAP.	100µF 16V M
	C1704	NCB21HK-103X	C CAP.	0.01µF 50V K
	C1705	NDC21HJ-181X	C CAP.	180pF 50V J
	C1706	QETN1HM-474Z	E CAP.	0.47µF 50V M
	C1708	QETN1HM-105Z	E CAP.	1µF 50V M
	C1709	NDC21HJ-221X	C CAP.	220pF 50V J
	C1710-11	NDC21HJ-390X	C CAP.	39pF 50V J
	C1712	NDC21HJ-270X	C CAP.	27pF 50V J
	C1714	NCB21HK-103X	C CAP.	0.01µF 50V K
	C1715	QETN1CM-107Z	E CAP.	100µF 16V M
	C1716	NCB21HK-103X	C CAP.	0.01µF 50V K
	C1717-18	NDC21HJ-330X	C CAP.	33pF 50V J
	C1719	NDC21HJ-471X	C CAP.	470pF 50V J
	C1720-21	NCB21HK-103X	C CAP.	0.01µF 50V K
	C1724	NDC21HJ-471X	C CAP.	470pF 50V J

⚠	Symbol No.	Part No.	Part Name	Description
	CAPACITOR			
	C1736	NCB21HK-102X	C CAP.	1000pF 50V K
	C1741	QFN31HJ-102Z	M CAP.	1000pF 50V J
	C1743	NCB21HK-103X	C CAP.	0.01μF 50V K
	C1744	NDC21HJ-221X	C CAP.	220pF 50V J
	C1771	QETN1EM-476Z	E CAP.	47μF 25V M
	C1772	NCB21HK-103X	C CAP.	0.01μF 50V K
	C1773	QETN1CM-107Z	E CAP.	100μF 16V M
	C1774	QETN1CM-227Z	E CAP.	220μF 16V M
	C1784	QETN1HM-336Z	E CAP.	33μF 50V M
	C1801-03	QETN1HM-474Z	E CAP.	0.47μF 50V M
⚠	C1901	QFZ9067-104	MF CAP.	0.1μFAC275V M
⚠	C1902	QFZ9067-473	MF CAP.	0.047μFAC275V M
⚠	C1903	QFZ9067-104	MF CAP.	0.1μFAC275V M
⚠	C1904	QCZ9052-102	C CAP.	1000pFAC125V M
⚠	C1906	QCZ9078-102	C CAP.	1000pFAC250V M
⚠	C1907	QCZ9078-102	C CAP.	1000pFAC250V M
⚠	C1908	QCZ9078-102	C CAP.	1000pFAC250V M
⚠	C1910	QEZ0429-477	E CAP.	470μF 200V M
	C1911	QETN1EM-108Z	E CAP.	1000μF 25V M
	C1912	QFN31HJ-102Z	M CAP.	1000pF 50V J
	C1913	QCZ0131-102	C CAP.	1000pF 2kV K
	C1914	QCZ0325-391	C CAP.	390pF 2kV K
⚠	C1915	QFP32GJ-223	PP CAP.	0.022μF 400V J
	C1916	QCZ0131-332	C CAP.	3300pF 2kV K
	C1918	NCB21HK-102X	C CAP.	1000pF 50V K
	C1920	QFLC1HJ-823Z	M CAP.	0.082μF 50V J
	C1921-23	QCZ0132-152Z	C CAP.	1500pF 500V K
	C1924	QEZ0420-107	E CAP.	100μF 160V M
	C1925	QCZ0132-152Z	C CAP.	1500pF 500V K
	C1926	QEHQ1VM-108	E CAP.	1000μF 35V M
	C1927	QEHR1CM-227Z	E CAP.	220μF 16V M
	C1928	QETN1EM-108Z	E CAP.	1000μF 25V M
	C1931	QETN1EM-476Z	E CAP.	47μF 25V M
⚠	C1932	QEHR1VM-476Z	E CAP.	47μF 35V M
	C1934	NCB21HK-102X	C CAP.	1000pF 50V K
	C1935	QETN1HM-107Z	E CAP.	100μF 50V M
	C1937	QETN2CM-106Z	E CAP.	10μF 160V M
	C1938	NDC21HJ-102X	C CAP.	1000pF 50V J
	C1951	QETN1CM-107Z	E CAP.	100μF 16V M
	C1952	QETN1HM-476Z	E CAP.	47μF 50V M
	C1954	QEHR1HM-226Z	E CAP.	22μF 50V M
⚠	C1990	QCZ9074-103	C CAP.	0.01μFAC250V M
⚠	C1991	QCZ9074-103	C CAP.	0.01μFAC250V M
	TRANSFORMER			
	T1131	QQR0907-001	I.F.TRANSFOMER	
	T1161	CELT003-109J3	S.I.F.TRANSF.	
	T1521	CE42034-002	H.DRIVE TRANSF.	
⚠	T1522	QQH0062-001	H.V.TRANSF.	
⚠	T1901	QQS0063-001	SWITCH.TRANSF.	
	COIL			
	L1102	QQLZ014-R22	PEAKING COIL	
	L1104	QQL29BJ-680Z	PEAKING COIL	
	L1131	QQL29BJ-220Z	PEAKING COIL	
	L1161	QQL29BJ-680Z	PEAKING COIL	
	L1162	QQL29BJ-220Z	PEAKING COIL	
	L1201	QQL244K-270Z	PEAKING COIL	
⚠	L1531	QQR1027-004	LINE FILTER	
	L1532	QQLZ027-821	CHOKE COIL	
⚠	L1591	QQLZ026-930	HEATER CHOKE	
	L1701	QQL29BJ-4R7Z	PEAKING COIL	
	L1702	QQL244J-100Z	COIL	10μH J
	L1771	QQL29BJ-4R7Z	PEAKING COIL	
	L1921-22	QQL42AK-820Z	COIL	82μH K
	DIODE			
	D1001	MTZJ33A-T2	ZENER DIODE	
	D1231	1SS133-T2	SI.DIODE	
	D1232	1SS133-T2	SI.DIODE	
	D1233	1SS133-T2	SI.DIODE	
	D1234	1SS133-T2	SI.DIODE	

⚠	Symbol No.	Part No.	Part Name	Description
	DIODE			
	D1421	1N4003-T2	SI.DIODE	
	D1422	MTZJ75-T2	ZENER DIODE	
	D1511	MTZJ3.3A-T2	ZENER DIODE	
	D1531	RH3G-F1	SI.DIODE	
	D1532	RU3AM-LFC4	SI.DIODE	
⚠	D1533	RGP10J-5025-T3	SI.DIODE	
	D1541	RH1S-T3	SI.DIODE	
⚠	D1542	RGP10J-5025-T3	SI.DIODE	
	D1544	1SS81-T2	SI.DIODE	
	D1546	1SR124-400A-T2	SI.DIODE	
	D1549	MTZJ9.1B-T2	ZENER DIODE	
⚠	D1551	MA4068N/Z1/-T2	ZENER DIODE	
	D1560	1SS133-T2	SI.DIODE	
	D1561	1SS133-T2	SI.DIODE	
	D1601	1SS133-T2	SI.DIODE	
	D1602	1SS133-T2	SI.DIODE	
	D1609	1SS133-T2	SI.DIODE	
	D1702	1SS133-T2	SI.DIODE	
	D1703	1SS133-T2	SI.DIODE	
	D1704	1SS133-T2	SI.DIODE	
	D1741	1SS133-T2	SI.DIODE	
	D1742	1SS133-T2	SI.DIODE	
	D1771	1SS133-T2	SI.DIODE	
	D1772	1SS133-T2	SI.DIODE	
	D1801	MTZJ5.1B-T2	ZENER DIODE	
	D1804	1SS133-T2	SI.DIODE	
⚠	D1901	D3SBA60-S1	BRIDGE DIODE	
⚠	D1902	RGP10J-5025-T3	SI.DIODE	
	D1903	1SS133-T2	SI.DIODE	
	D1904	1SS133-T2	SI.DIODE	
	D1905	EG1A-T3	SI.DIODE	
	D1909	MTZJ15A-T2	ZENER DIODE	
⚠	D1910	RGP10J-5025-T3	SI.DIODE	
	D1911	1SS133-T2	SI.DIODE	
	D1912	MTZJ15A-T2	ZENER DIODE	
⚠	D1913	RGP10J-5025-T3	SI.DIODE	
⚠	D1914	RGP10J-5025-T3	SI.DIODE	
⚠	D1916	RGP10J-5025-T3	SI.DIODE	
	D1918	MTZJ15A-T2	ZENER DIODE	
	D1921	RU3AM-LFC4	SI.DIODE	
	D1922	RU3YX-LFC4	SI.DIODE	
	D1923	EGP10DL-6006-F1	SI.DIODE	
⚠	D1925	RGP10J-5025-T3	SI.DIODE	
	D1926	1SS133-T2	SI.DIODE	
	D1927	1SS133-T2	SI.DIODE	
	D1928	1SS133-T2	SI.DIODE	
	D1931	1SS133-T2	SI.DIODE	
	D1933	1SS133-T2	SI.DIODE	
	D1942	MTZJ6.8C-T2	ZENER DIODE	
⚠	D1951	MTZJ7.5A-T2	ZENER DIODE	
	TRANSISTOR			
	Q1001	DTC124EKA-X	DIGI.TRANSISTOR	
	Q1101	2SC5083/L-P/-T	SI.TRANSISTOR	
	Q1131-32	2SC2412K/QR/-X	SI.TRANSISTOR	
	Q1161	2SC2412K/QR/-X	SI.TRANSISTOR	
	Q1203	2SC2412K/QR/-X	SI.TRANSISTOR	
	Q1204-05	2SA1037AK/QR/-X	SI.TRANSISTOR	
	Q1231-32	2SC2412K/QR/-X	SI.TRANSISTOR	
	Q1301	2SC2412K/QR/-X	SI.TRANSISTOR	
	Q1521	2SC4212/Z1/	SI.TRANSISTOR	
⚠	Q1531	2SD2499-LB	SI.TRANSISTOR	
	Q1541	2SA1037AK/QR/-X	SI.TRANSISTOR	
⚠	Q1542	2SC2785/JH/-T	SI.TRANSISTOR	
	Q1601	DTC124EKA-X	DIGI.TRANSISTOR	
	Q1602	2SC2412K/QR/-X	SI.TRANSISTOR	
	Q1603	DTC124EKA-X	DIGI.TRANSISTOR	
	Q1604	2SA1037AK/QR/-X	SI.TRANSISTOR	
	Q1701	DTC124EKA-X	DIGI.TRANSISTOR	
	Q1741	2SC2412K/QR/-X	SI.TRANSISTOR	
	Q1742	DTC124EKA-X	DIGI.TRANSISTOR	
	Q1743	2SC2412K/QR/-X	SI.TRANSISTOR	
	Q1911	2SA1037AK/QR/-X	SI.TRANSISTOR	
	Q1912	2SD2088-T	SI.TRANSISTOR	
	Q1921	2SC2412K/QR/-X	SI.TRANSISTOR	
	Q1922	2SD1383K/AB/-X	SI.TRANSISTOR	

⚠	Symbol No.	Part No.	Part Name	Description
	TRANSISTOR			
	Q1923	2SA1020/Y/-T	SI.TRANSISTOR	
	Q1924	2SC2412K/QR/-X	SI.TRANSISTOR	
	Q1925	2SA949/Y/Z1-T	SI.TRANSISTOR	
	Q1926	2SC2240/GL/-T	SI.TRANSISTOR	
	Q1927-28	DTC124EKA-X	DIGI.TRANSISTOR	
	Q1942	2SC2412K/QR/-X	SI.TRANSISTOR	
	Q1943	2SC2240/GL/-T	SI.TRANSISTOR	
	Q1944	DTC124EKA-X	DIGI.TRANSISTOR	
	Q1951	2SA949/Y/Z1-T	SI.TRANSISTOR	
	IC			
	IC1001	BA17805T	I.C.(MONO-ANA)	
	IC1101	AN7809F	I.C.(MONO-ANA)	
	IC1201	TA1242N	I.C.(MONO-ANA)	
⚠	IC1421	LA7832	I.C.(MONO-ANA)	
⚠	IC1601	LA4485	I.C.(MONO-ANA)	
	IC1701	MN1876478JT1	I C	
	IC1702	AT24C04-27GFH	I.C.	(SERVICE)
	IC1703	S-80840ALY-T	I.C.(MONO-ANA)	
	IC1771	AN77L05-T	I.C.(MONO-ANA)	
⚠	IC1901	STR-F6626/F7	I.C.(HYBRID)	
⚠	IC1941	SE135N	I.C.(HYBRID)	
	OTHERS			
	CF1001	QAX0349-001	CERAMIC FILTER	
	CF1131	QAX0339-001	CERAMIC FILTER	
	CF1161	SFSH4.5MCB	CERAMIC FILTER	
	CF1501	CSB503F30-T2	CER.RESONATOR	
	CF1701	QAX0685-001	CER.RESONATOR	
	CL1003	CM47653-001	P.W.B.HOLDER	
	CN1001	QGB1505J1-35	RECEPTACLE	
⚠	CP1902	ICP-N75-Y	I.C.PROTECT	
⚠	F1901	QMF0007-5R0J1	FUSE	
⚠	FC1901	CEMG002-001Z	FUSE CLIP	
⚠	LF1901	QQR1084-001	LINE FILTER	
⚠	LF1902	QQR0532-003	LINE FILTER	
⚠	RY1901	CESK028-001	RELAY	
⚠	RY1921	CESK028-001	RELAY	
⚠	TH1901	CEKP007-002	P.THERMISTOR	
⚠	TU1001	QAU0176-001	TUNER	
	K1421	QQR0582-001Z	BEADS CORE	
	K1703	QQR0582-001Z	BEADS CORE	
	K1901	QQR0621-002Z	BEADS CORE	
	K1902	QQR0621-002Z	BEADS CORE	
	K1903	QQR0621-002Z	BEADS CORE	
	K1905	QQR0621-002Z	BEADS CORE	
	K1906	QQR0621-002Z	BEADS CORE	
	K1921	QQR0621-002Z	BEADS CORE	
	K1922	QQR0621-002Z	BEADS CORE	
	K1923	QQR0621-002Z	BEADS CORE	
	K1924	QQR0621-002Z	BEADS CORE	
⚠	PC1901	TLP621(B)	I.C.(PH.COUPLER)	
⚠	PC1902	TLP621(B)	I.C.(PH.COUPLER)	
	S1421	QSL4A13-C02	LEVER SWITCH	
	SF1101	QAX0324-002	SAW FILTER	
⚠	VA1901	ERZV10V621CS	VARISTOR	
	X1301	QAX0310-001Z	CRYSTAL	

CRT SOCKET PW BOARD ASS'Y (SGF-3001A-M2)

⚠	Symbol No.	Part No.	Part Name	Description
	RESISTOR			
	R3351-53	NRSA02J-221X	MG R	220Ω 1/10W J
	R3354-56	NRSA02J-181X	MG R	180Ω 1/10W J
	R3357-59	NRSA02J-101X	MG R	100Ω 1/10W J
	R3360-62	QRZ0111-152	C R	1.5kΩ 1/2W K
	R3363-65	QRG029J-103	OM R	10kΩ 2W J
	R3366-68	NRSA02J-152X	MG R	1.5kΩ 1/10W J
	R3381	QRE121J-394Y	C R	390kΩ 1/2W J
	CAPACITOR			
	C3354-55	NCS21HJ-331X	C CAP.	330pF 50V J
	C3356	NCS21HJ-391X	C CAP.	390pF 50V J
	C3357	QETN1CM-107Z	E CAP.	100µF 16V M
⚠	C3382	QCZ0121-102	C CAP.	1000pF 3kV Z
	COIL			
	L3381	QQL29BJ-101Z	PEAKING COIL	
	TRANSISTOR			
	Q3351-53	2SC4544-LB	SI.TRANSISTOR	
	OTHERS			
⚠	SK3351	CE42446-001	C.R.T.SOCKET	

FRONT CONTROL PW BOARD ASS'Y (SGF-4001A-M2)

⚠	Symbol No.	Part No.	Part Name	Description
	RESISTOR			
	R4701	NRSA02J-103X	MG R	10kΩ 1/10W J
	R4702	NRSA02J-472X	MG R	4.7kΩ 1/10W J
	R4703	NRSA02J-153X	MG R	15kΩ 1/10W J
	R4704	NRSA02J-103X	MG R	10kΩ 1/10W J
	R4705	NRSA02J-472X	MG R	4.7kΩ 1/10W J
	R4706	NRSA02J-153X	MG R	15kΩ 1/10W J
	R4707	NRSA02J-222X	MG R	2.2kΩ 1/10W J
	R4708	NRSA02J-681X	MG R	680Ω 1/10W J
	R4709	NRSA02J-561X	MG R	560Ω 1/10W J
	CAPACITOR			
	C4841	QETN1EM-476Z	E CAP.	47µF 25V M
	DIODE			
	D4701	GL2PR6	L.E.D.(RED)	
	TRANSISTOR			
	Q4701-02	DTA124EKA-X	DIGI.TRANSISTOR	
	IC			
	IC4841	PIC-28143SY	IFR DETECT UNIT	
	OTHERS			
		CM46978-A01-H	L.E.D.HOLDER	
	S4702	QSW0707-001Z	TACT SWITCH	
	S4703	QSW0707-001Z	TACT SWITCH	
	S4704	QSW0707-001Z	TACT SWITCH	
	S4705	QSW0707-001Z	TACT SWITCH	
	S4706	QSW0707-001Z	TACT SWITCH	
	S4707	QSW0707-001Z	TACT SWITCH	

AV SELECTOR PW BOARD ASS'Y (SGF-8008A-M2)

RESISTOR

⚠	Symbol No.	Part No.	Part Name	Description	
	R8202	NRSA02J-101X	MG R	100Ω 1/10W	J
	R8203	NRSA02J-562X	MG R	5.6kΩ 1/10W	J
	R8204	NRSA02J-101X	MG R	100Ω 1/10W	J
	R8210	NRSA02J-0R0X	MG R	0.0Ω 1/10W	J
	R8211	NRSA02J-153X	MG R	15kΩ 1/10W	J
	R8212	NRSA02J-333X	MG R	33kΩ 1/10W	J
	R8213	NRSA02J-102X	MG R	1kΩ 1/10W	J
	R8214	NRSA02J-181X	MG R	180Ω 1/10W	J
	R8215	NRSA02J-152X	MG R	1.5kΩ 1/10W	J
	R8216-17	NRSA02J-182X	MG R	1.8kΩ 1/10W	J
	R8218	NRSA02J-102X	MG R	1kΩ 1/10W	J
	R8223	NRSA02J-0R0X	MG R	0.0Ω 1/10W	J
	R8229	NRSA02J-473X	MG R	47kΩ 1/10W	J
	R8230	NRSA02J-223X	MG R	22kΩ 1/10W	J
	R8231	NRSA02J-101X	MG R	100Ω 1/10W	J
	R8232	NRSA02J-102X	MG R	1kΩ 1/10W	J
	R8233	NRSA02J-272X	MG R	2.7kΩ 1/10W	J
	R8234	NRSA02J-102X	MG R	1kΩ 1/10W	J
	R8235-36	NRSA02J-101X	MG R	100Ω 1/10W	J
	R8241	NRSA02J-821X	MG R	820Ω 1/10W	J
	R8251	NRSA02J-471X	MG R	470Ω 1/10W	J
	R8255	NRSA02J-681X	MG R	680Ω 1/10W	J
	R8256	NRSA02J-182X	MG R	1.8kΩ 1/10W	J
	R8257	NRSA02J-472X	MG R	4.7kΩ 1/10W	J
	R8258	NRSA02J-101X	MG R	100Ω 1/10W	J
	R8259	NRSA02J-222X	MG R	2.2kΩ 1/10W	J
	R8271	NRSA02J-0R0X	MG R	0.0Ω 1/10W	J
	R8275	NRSA02J-152X	MG R	1.5kΩ 1/10W	J
	R8276	NRSA02J-0R0X	MG R	0.0Ω 1/10W	J
	R8301	NRSA02J-471X	MG R	470Ω 1/10W	J
	R8303	NRSA02J-102X	MG R	1kΩ 1/10W	J
	R8304	NRSA02J-101X	MG R	100Ω 1/10W	J
	R8305	NRSA02J-222X	MG R	2.2kΩ 1/10W	J
	R8306	NRSA02J-471X	MG R	470Ω 1/10W	J
	R8310-11	NRSA02J-153X	MG R	15kΩ 1/10W	J
	R8312	NRSA02J-221X	MG R	220Ω 1/10W	J
	R8371	NRSA02J-222X	MG R	2.2kΩ 1/10W	J
	R8372	NRSA02J-471X	MG R	470Ω 1/10W	J
	R8375	NRSA02J-183X	MG R	18kΩ 1/10W	J
	R8376	NRSA02J-103X	MG R	10kΩ 1/10W	J
	R8377	NRSA02J-152X	MG R	1.5kΩ 1/10W	J
	R8378	NRSA02J-0R0X	MG R	0.0Ω 1/10W	J
	R8601	NRSA02J-102X	MG R	1kΩ 1/10W	J
	R8602-03	NRSA02J-682X	MG R	6.8kΩ 1/10W	J
	R8604	NRSA02J-683X	MG R	68kΩ 1/10W	J
	R8605	NRSA02J-332X	MG R	3.3kΩ 1/10W	J
	R8606	NRSA02J-333X	MG R	33kΩ 1/10W	J
	R8607	NRVA02D-153X	MF R	15kΩ 1/10W	D
	R8609	NRVA02D-152X	MF R	1.5kΩ 1/10W	D
	R8611	NRSA02J-512X	MG R	5.1kΩ 1/10W	J
	R8613-16	NRSA02J-101X	MG R	100Ω 1/10W	J
	R8661	NRSA02J-123X	MG R	12kΩ 1/10W	J
	R8662	NRSA02J-473X	MG R	47kΩ 1/10W	J
	R8663-64	NRSA02J-123X	MG R	12kΩ 1/10W	J
	R8665	NRSA02J-473X	MG R	47kΩ 1/10W	J
	R8666	NRSA02J-123X	MG R	12kΩ 1/10W	J
	R8667-68	NRSA02J-562X	MG R	5.6kΩ 1/10W	J
	R8671	NRSA02J-562X	MG R	5.6kΩ 1/10W	J
	R8672	NRSA02J-223X	MG R	22kΩ 1/10W	J
	R8683	NRSA02J-223X	MG R	22kΩ 1/10W	J
	R8684	NRSA02J-223X	MG R	22kΩ 1/10W	J
	R8685	NRSA02J-223X	MG R	22kΩ 1/10W	J
	R8686	NRSA02J-223X	MG R	22kΩ 1/10W	J
	R8691-94	NRSA02J-221X	MG R	220Ω 1/10W	J
	R8695-96	NRSA02J-823X	MG R	82kΩ 1/10W	J
	R8801	NRSA02J-820X	MG R	82Ω 1/10W	J
	R8802	NRSA02J-750X	MG R	75Ω 1/10W	J
	R8803	NRSA02J-820X	MG R	82Ω 1/10W	J
	R8804-05	NRSA02J-823X	MG R	82kΩ 1/10W	J
	R8808	NRSA02J-820X	MG R	82Ω 1/10W	J
	R8809-10	NRSA02J-823X	MG R	82kΩ 1/10W	J
	R8811	NRSA02J-102X	MG R	1kΩ 1/10W	J

RESISTOR

⚠	Symbol No.	Part No.	Part Name	Description	
	R8812	NRSA02J-102X	MG R	1kΩ 1/10W	J
	R8813	NRSA02J-102X	MG R	1kΩ 1/10W	J
	R8814	NRSA02J-102X	MG R	1kΩ 1/10W	J
	R8815	NRSA02J-153X	MG R	15kΩ 1/10W	J
	R8816	NRSA02J-103X	MG R	10kΩ 1/10W	J
	R8817	NRSA02J-153X	MG R	15kΩ 1/10W	J
	R8818	NRSA02J-102X	MG R	1kΩ 1/10W	J
	R8830	NRSA02J-103X	MG R	10kΩ 1/10W	J
	R8831	NRSA02J-821X	MG R	820Ω 1/10W	J
	R8832-33	NRSA02J-182X	MG R	1.8kΩ 1/10W	J
	R8835	NRSA02J-273X	MG R	27kΩ 1/10W	J
	R8836	NRSA02J-223X	MG R	22kΩ 1/10W	J
	R8837	NRSA02J-222X	MG R	2.2kΩ 1/10W	J
	R8851	NRSA02J-562X	MG R	5.6kΩ 1/10W	J
	R8852	NRSA02J-223X	MG R	22kΩ 1/10W	J
	R8861-64	NRSA02J-0R0X	MG R	0.0Ω 1/10W	J
	R8865	NRSA02J-104X	MG R	100kΩ 1/10W	J

CAPACITOR

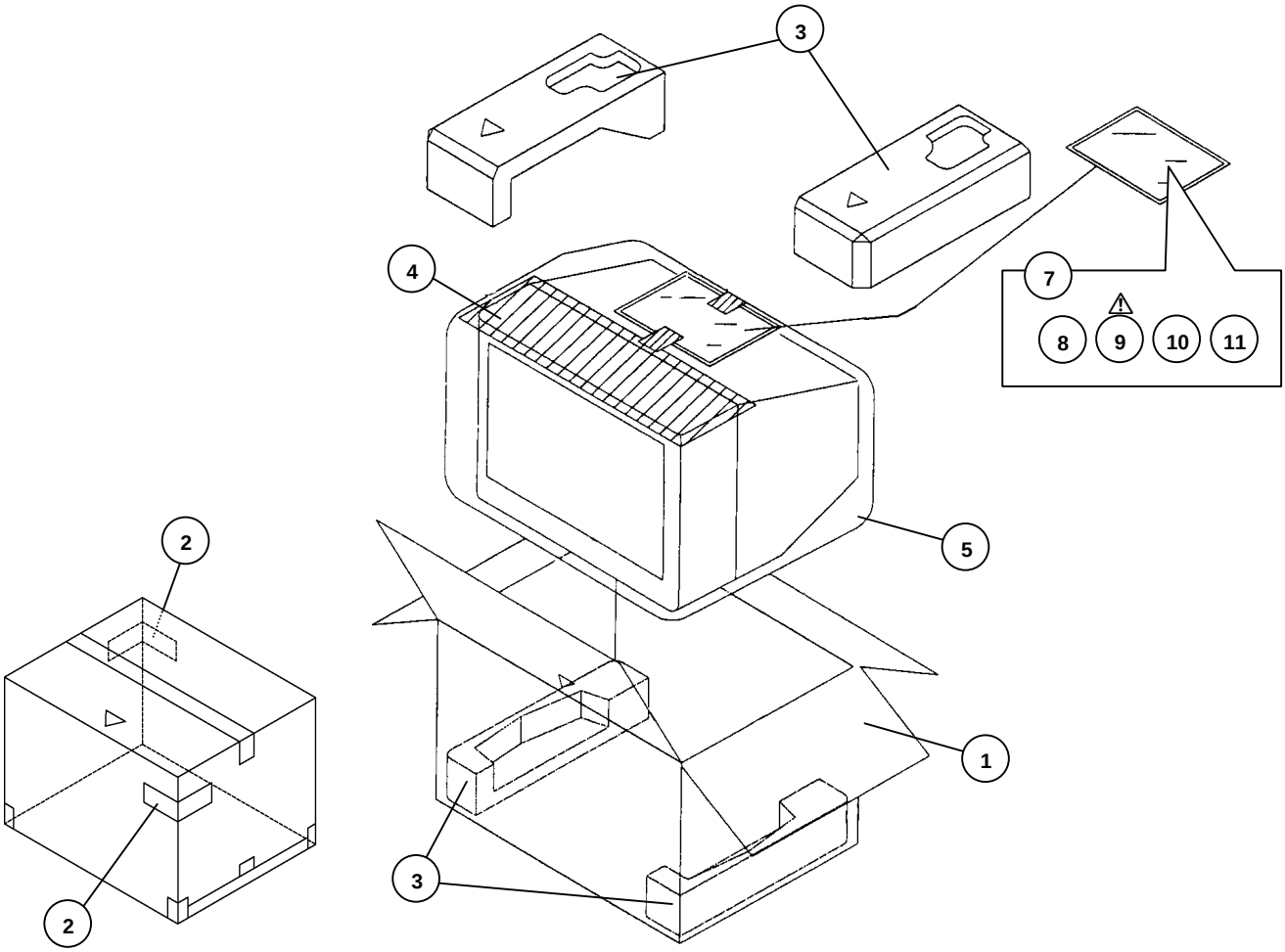
	C8201	QETN1CM-107Z	E CAP.	100µF 16V	M
	C8203	QETN1EM-476Z	E CAP.	47µF 25V	M
	C8204	NCB21HK-103X	C CAP.	0.01µF 50V	K
	C8208	NCB21HK-103X	C CAP.	0.01µF 50V	K
	C8209	QETN1EM-476Z	E CAP.	47µF 25V	M
	C8211	QENC1EM-106Z	BP E CAP.	10µF 25V	M
	C8212	NDC21HJ-101X	C CAP.	100pF 50V	J
	C8213	NDC21HJ-470X	C CAP.	47pF 50V	J
	C8214	NDC21HJ-181X	C CAP.	180pF 50V	J
	C8215	QETN1HM-474Z	E CAP.	0.47µF 50V	M
	C8223	NCB21HK-103X	C CAP.	0.01µF 50V	K
	C8226	NCB21HK-103X	C CAP.	0.01µF 50V	K
	C8231-32	QETN1EM-476Z	E CAP.	47µF 25V	M
	C8241-45	NCB21HK-103X	C CAP.	0.01µF 50V	K
	C8246	NDC21HJ-181X	C CAP.	180pF 50V	J
	C8247-49	NCB21HK-103X	C CAP.	0.01µF 50V	K
	C8251	QETN1EM-476Z	E CAP.	47µF 25V	M
	C8252	NCB21HK-103X	C CAP.	0.01µF 50V	K
	C8255	NDC21HJ-390X	C CAP.	39pF 50V	J
	C8304	NDC21HJ-150X	C CAP.	15pF 50V	J
	C8306	NDC21HJ-680X	C CAP.	68pF 50V	J
	C8307	NDC21HJ-271X	C CAP.	270pF 50V	J
	C8371	NCB21HK-103X	C CAP.	0.01µF 50V	K
	C8375	NCB21HK-103X	C CAP.	0.01µF 50V	K
	C8601	QETN1CM-107Z	E CAP.	100µF 16V	M
	C8602	NCB21HK-103X	C CAP.	0.01µF 50V	K
	C8603	QETN1EM-476Z	E CAP.	47µF 25V	M
	C8604	NCB21HK-104X	CHIP CAP.	0.1µF 50V	K
	C8605	QENC1HM-475Z	BP E CAP.	4.7µF 50V	M
	C8606	QENC1HM-105Z	BP E CAP.	1µF 50V	M
	C8607	QETN1HM-225Z	E CAP.	2.2µF 50V	M
	C8608	NCB21HK-473X	C CAP.	0.047µF 50V	K
	C8609	QETN1HM-474Z	E CAP.	0.47µF 50V	M
	C8610-11	NCB21HK-104X	CHIP CAP.	0.1µF 50V	K
	C8612	QETN1HM-105Z	E CAP.	1µF 50V	M
	C8613	QBTC1CK-335Z	TAN.CAP.	3.3µF 16V	K
	C8614	QBTC1CK-106Z	TAN.CAP.	10µF 16V	K
	C8615-16	QETN1HM-105Z	E CAP.	1µF 50V	M
	C8617	QETN1HM-475Z	E CAP.	4.7µF 50V	M
	C8618	QETN1HM-105Z	E CAP.	1µF 50V	M
	C8619	NCB21HK-273X	C CAP.	0.027µF 50V	K
	C8620	QETN1HM-225Z	E CAP.	2.2µF 50V	M
	C8621	NCB21HK-222X	C CAP.	2200pF 50V	K
	C8622	NCB21HK-104X	CHIP CAP.	0.1µF 50V	K
	C8623	QETN1HM-225Z	E CAP.	2.2µF 50V	M
	C8624	NCB21HK-222X	C CAP.	2200pF 50V	K
	C8625	NCB21HK-104X	CHIP CAP.	0.1µF 50V	K
	C8628	QETN1HM-105Z	E CAP.	1µF 50V	M
	C8661-62	QENC1HM-105Z	BP E CAP.	1µF 50V	M
	C8664	QETN1EM-476Z	E CAP.	47µF 25V	M
	C8691-92	QETN1HM-474Z	E CAP.	0.47µF 50V	M
	C8811-14	QETN1HM-105Z	E CAP.	1µF 50V	M

⚠	Symbol No.	Part No.	Part Name	Description
	CAPACITOR			
	C8821-22	QETN1HM-106Z	E CAP.	10µF 50V M
	C8825-27	QETN1HM-106Z	E CAP.	10µF 50V M
	C8831	QETN1EM-476Z	E CAP.	47µF 25V M
	C8832	NCB21HK-103X	C CAP.	0.01µF 50V K
	C8833	QETN1HM-106Z	E CAP.	10µF 50V M
	C8835-36	QETN1EM-476Z	E CAP.	47µF 25V M
	COIL			
	L8201	QQL29BJ-6R8Z	PEAKING COIL	
	L8202	QQL29BJ-150Z	PEAKING COIL	
	L8203-04	QQL29BJ-4R7Z	PEAKING COIL	
	L8211	QQL29BJ-4R7Z	PEAKING COIL	
	L8251	QQL29BJ-6R8Z	PEAKING COIL	
	L8301-02	QQL29BJ-150Z	PEAKING COIL	
	L8801	QQL29BJ-6R8Z	PEAKING COIL	
	DIODE			
	D8693-94	MTZJ9.1C-T2	ZENER DIODE	
	D8811-22	MTZJ9.1C-T2	ZENER DIODE	
	TRANSISTOR			
	Q8201	2SC2412K/QR/-X	SI.TRANSISTOR	
	Q8211-12	2SC2412K/QR/-X	SI.TRANSISTOR	
	Q8218	2SC2412K/QR/-X	SI.TRANSISTOR	
	Q8219	2SA1037AK/QR/-X	SI.TRANSISTOR	
	Q8252	2SA1037AK/QR/-X	SI.TRANSISTOR	
	Q8253	2SC2412K/QR/-X	SI.TRANSISTOR	
	Q8271	2SC2412K/QR/-X	SI.TRANSISTOR	
	Q8301-02	2SC2412K/QR/-X	SI.TRANSISTOR	
	Q8304-05	2SC2412K/QR/-X	SI.TRANSISTOR	
	Q8371	2SC2412K/QR/-X	SI.TRANSISTOR	
	Q8671-72	DTC124EKA-X	DIGI.TRANSISTOR	
	Q8683-86	DTC323TK-X	DIGI.TRANSISTOR	
	Q8804-05	2SC2412K/QR/-X	SI.TRANSISTOR	
	Q8851-52	DTC124EKA-X	DIGI.TRANSISTOR	
	IC			
	IC8201	TC90A45P	I.C.(DIGI-MOS)	
	IC8202	AN78L05-T	I.C.(MONO-ANA)	
	IC8601	UPC1851BCU	I.C.(MONO-ANA)	
	IC8661	BA15218N	I.C.(MONO-ANA)	
	IC8671	TC4066BP/N/	I.C.(DIGI-MOS)	
	IC8801	BA7644AN	I.C.(MONO-ANA)	
	IC8803	TC4066BP/N/	I.C.(DIGI-MOS)	
	OTHERS			
	CN8001	QGB1505K1-35	PLUG	
	J8801	QNZ0454-001	PIN JACK	

FRONT AV IN PW BOARD ASS'Y (SGF-8304A-M2)

⚠	Symbol No.	Part No.	Part Name	Description
	OTHERS			
	J8001	QNN0417-001	PIN JACK	

PACKING



PACKING PARTS LIST

⚠	Ref.No.	Part No.	Part Name	Description
	1	LC10181-017A-A	PACKING CASE	
	2	CM36616-001-A	CORNER LABEL	
	3	LC10083-004B-A	CUSHION ASSY	4pcs in 1set
	4	CP30055-001-A	TOP COVER	
	5	CP30056-008-A	POLY BAG	
	7	QPA02503505	POLY BAG	
	8	QAM0365-001	TEL CORD	
⚠	9	LCT0965-001A-A	INST BOOK	
	10	BT-52004-1Q	WARRANTY CARD	
	11	BT-51027-1Q	WARRANTY CARD	

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